

The diagram illustrates the internal architecture of a disk drive system, divided into two main sections: 10 and 11.

Section 10 (Left Side):

- MPU (12):** Microprocessor Unit, connected to the Formatter and ECC Processor.
- Memory (18):** Connected to the MPU and the Interface.
- Interface (17):** Connects the Memory to the Host Unit and the DSP.
- Crystal Oscillator (101):** Provides a clock signal to the DSP.
- DSP (16):** Digital Signal Processor, the central control unit for the drive.

Section 11 (Right Side):

- ODC (14):** Optical Disk Controller, containing a **Formatter (14-1)** and an **ECC Processor (14-2)**.
- WRITE LSI (20):** Contains a **Laser Diode Control (22)** and a **Write Modulator (21)**.
- READ LSI (24):** Contains a **Read Demodulator (25)** and a **Frequency Synthesizer (26)**.
- Laser Diode Unit (30):** Contains a **Laser Diode (30-2)** and a **Monitoring Detector (30-1)**.
- Head Amp (34) and ID/MO Detector (32):** Receives signals from the Read LSI.
- Temperature Sensor (36):** Monitors the drive temperature.
- Spindle Motor (40) and Electromagnet (44):** Driven by the DSP.
- FES Detector (45) and TES Detector (47):** Detect Focus Error Signal (FES) and Track Error Signal (TES).
- TZC Detection (50):** Detects Zero Crossing (TZC).
- Lens Position Sensor (54):** Monitors the position of the lens.
- Focus Actuator (60), Lens Actuator (64), and VCM (68):** Actuators for focus, lens position, and voice coil motor, respectively, driven by the DSP.

Connections:

- The **Host Unit** connects to the **Interface (17)**.
- The **MPU (12)** and **DSP (16)** are connected via a bidirectional bus.
- The **DSP (16)** controls the **WRITE LSI (20)** and **READ LSI (24)** through a central bus.
- The **DSP (16)** provides control signals to the **Driver (38, 42, 58, 62, 66)** blocks.
- The **DSP (16)** receives feedback signals from the **FES Detector (45)**, **TES Detector (47)**, **TZC Detection (50)**, and **Lens Position Sensor (54)**.

FIG. 2

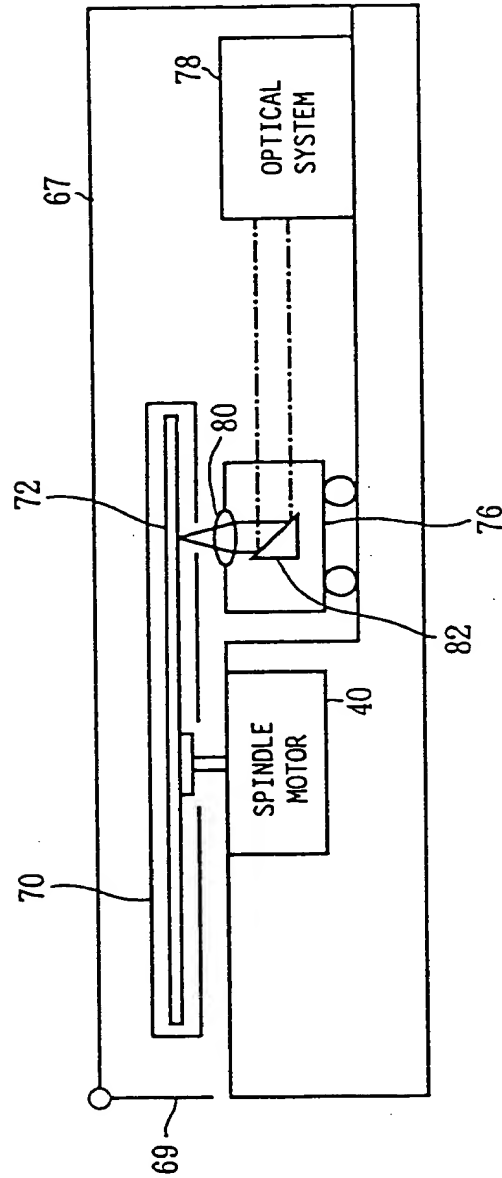


FIG.3

ZONE	ZCAV		(Kbyte/s)
	3637rpm	4138rpm	
OUTER PERIPHERY	0	5090	
	1	4966	
	2	4842	
	3	4717	
	4	4593	
	5	4469	5085
	6	4345	4944
	7	4221	4802
	8	4097	4661
	9	3973	4520
	10	3848	4379
	11	3724	4237
	12	3600	4096
	13	3476	3955
	14	3352	3814
	15	3228	3672
	16	3104	3531
INNER PERIPHERY	17	2979	3390
			4097

FIG.4

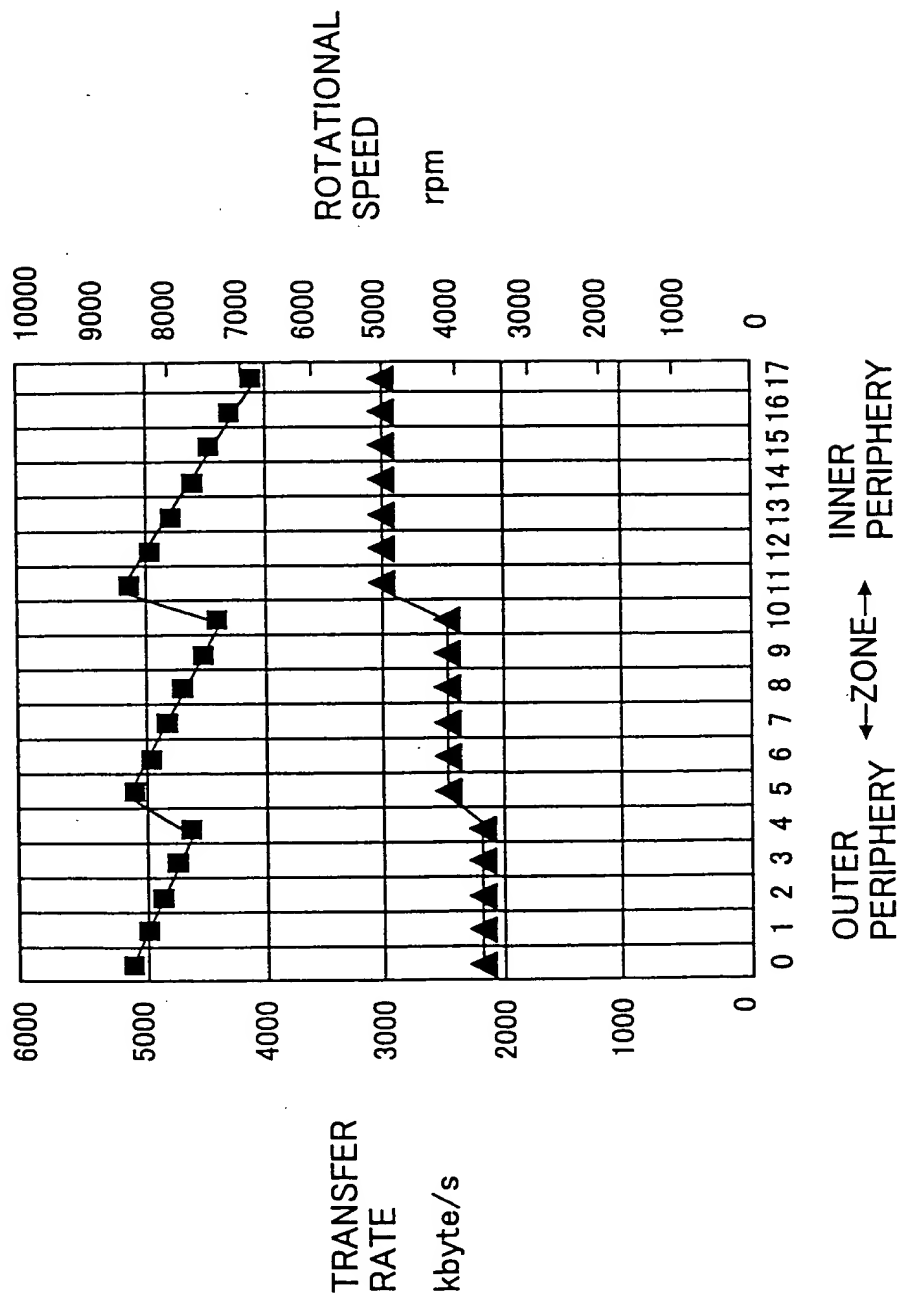


FIG.5

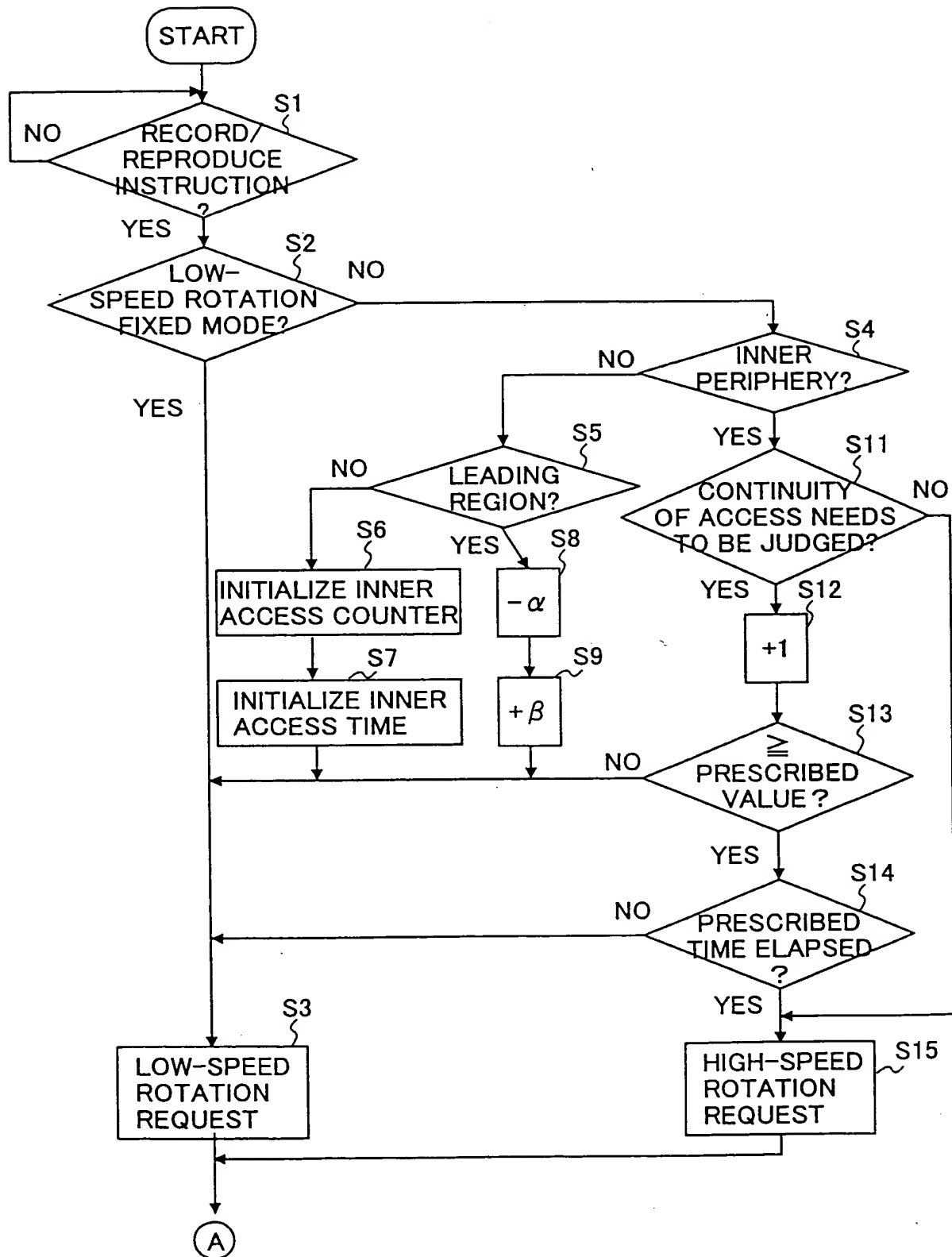


FIG.6

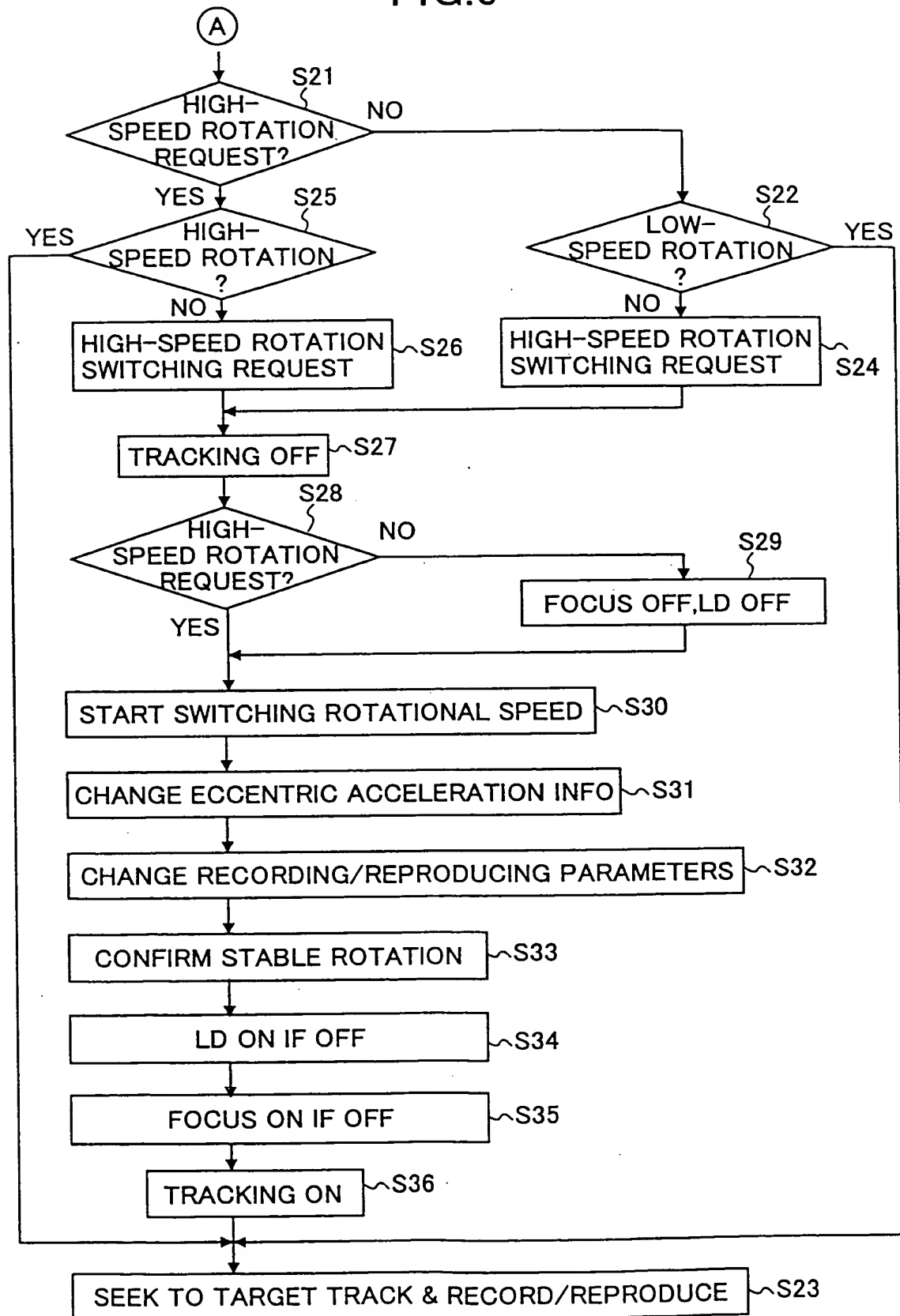


FIG. 7

	3637rpm	4138rpm	5001rpm
0	80.34	-	-
1	78.38	-	-
2	76.42	-	-
3	74.46	-	-
4	72.5	-	-
5	70.55	80.28	-
6	68.59	78.05	-
7	66.63	75.82	-
8	64.67	73.59	-
9	62.71	71.36	-
10	60.75	69.13	-
11	58.79	66.9	80.83
12	56.83	64.67	78.11
13	54.87	62.44	75.44
14	52.91	60.21	72.75
15	50.95	57.98	70.06
16	48.99	55.75	67.36
17	47.03	53.52	64.67

FIG.8

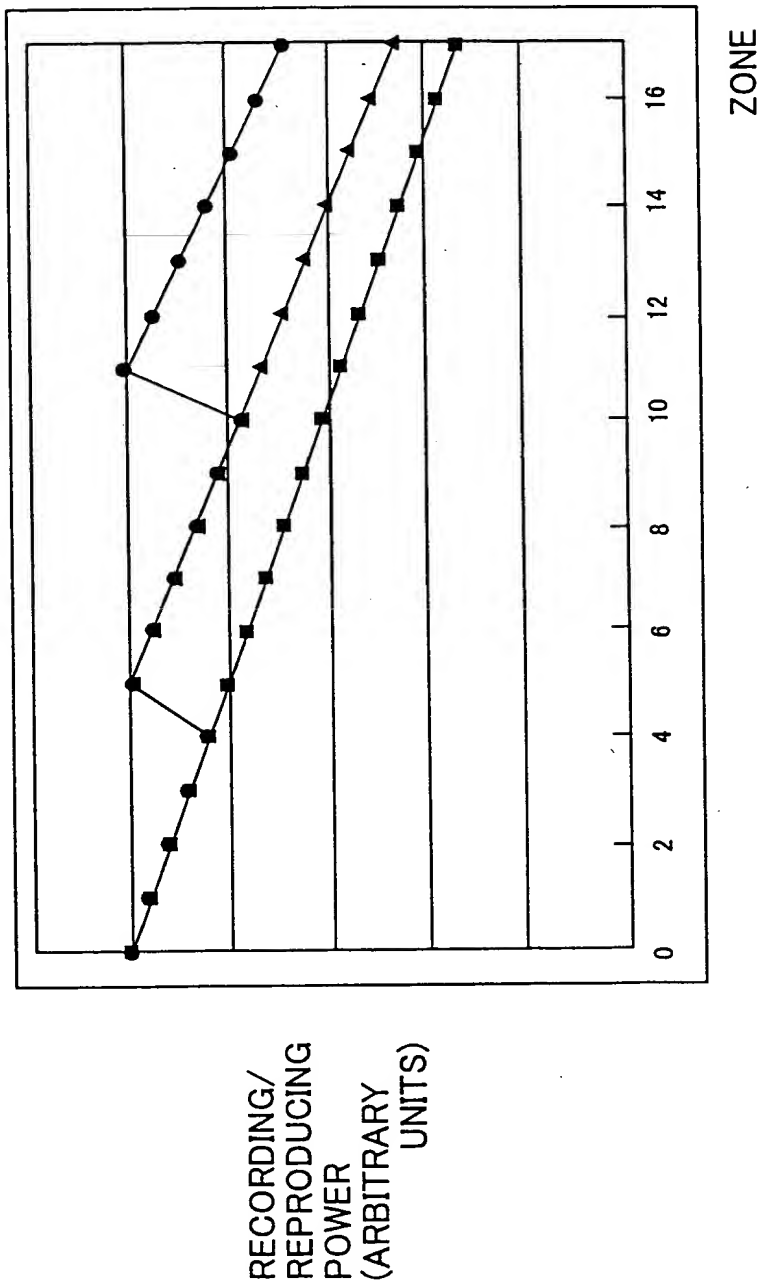


FIG.9

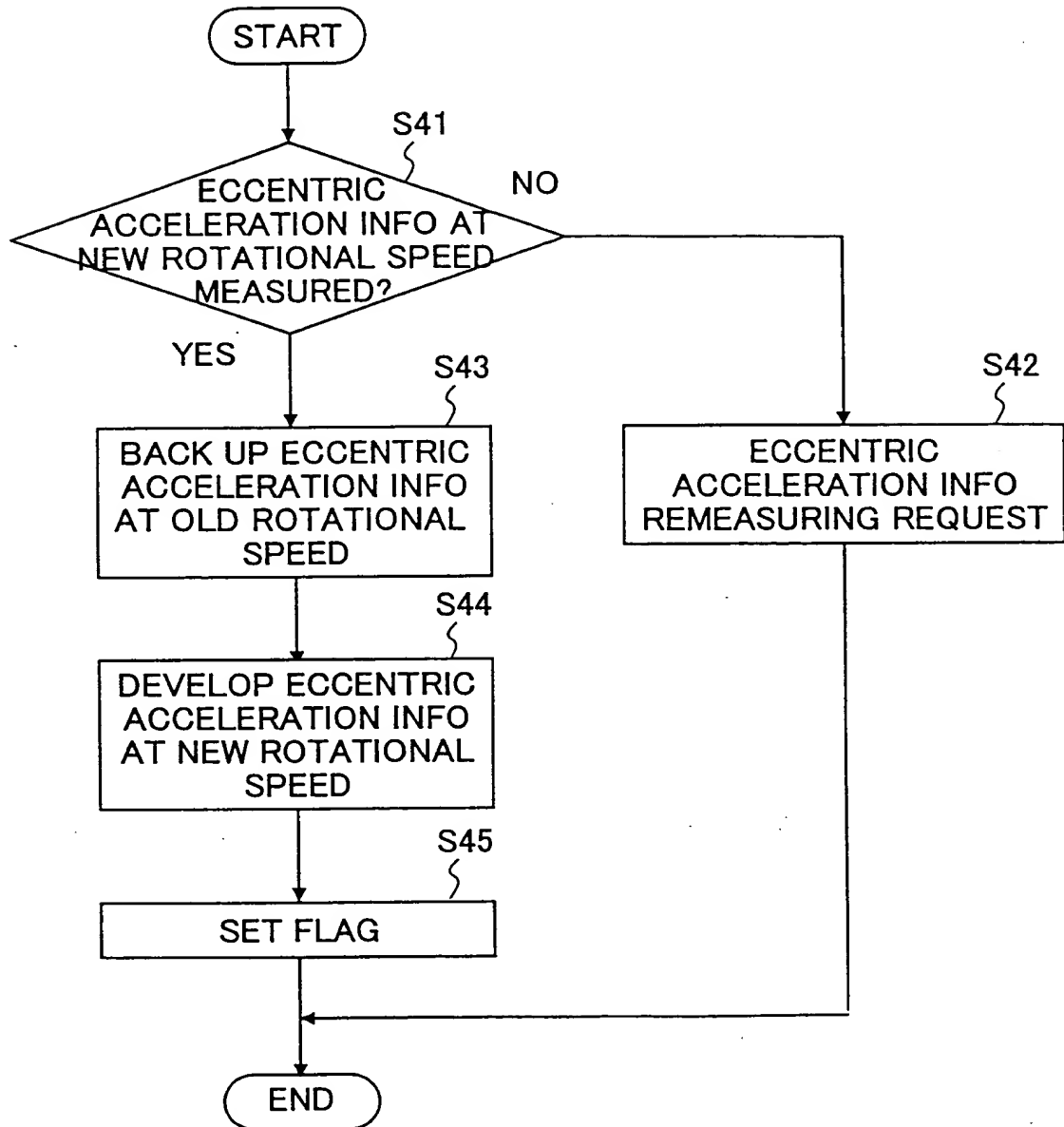


FIG.10

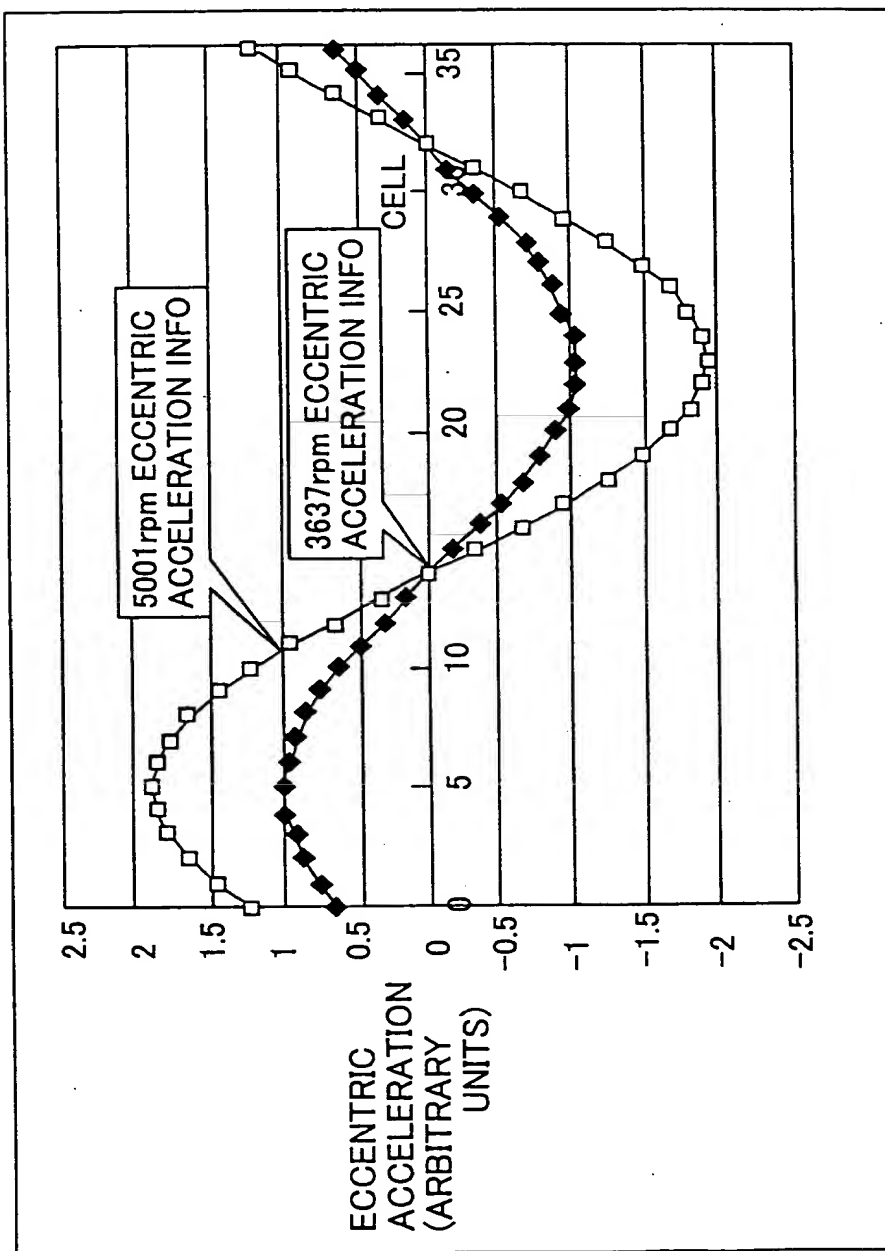


FIG.11

ZONE		ZCAV	(Kbyte/s)	
		3637rpm	4138rpm	5001rpm
OUTER PERIPHERY	0	5090		
	1	4966		
	2	4842		
	3	4717		
	4	4593		
	5	4469	5085	
	6	4345	4944	
	7	4221	4802	
	8	4097	4661	
	9	3973	4520	
	10	3848	4379	
	11	3724	4237	5121
	12	3600	4096	4950
	13	3476	3955	4780
	14	3352	3814	4609
	15	3228	3672	4438
	16	3104	3531	4268
INNER PERIPHERY	17	2979	3390	4097

[illegible]

FIG.13

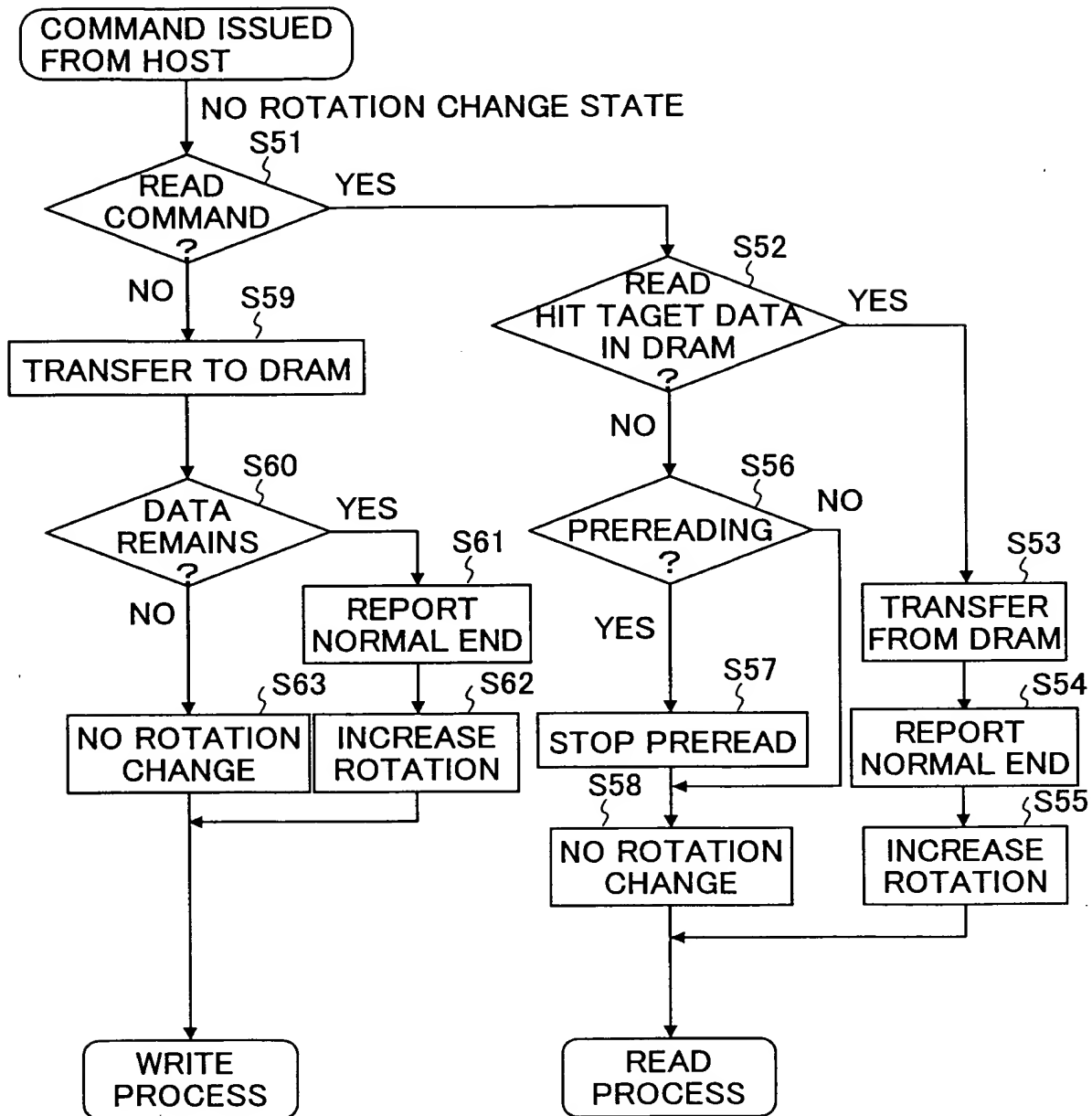


FIG. 14

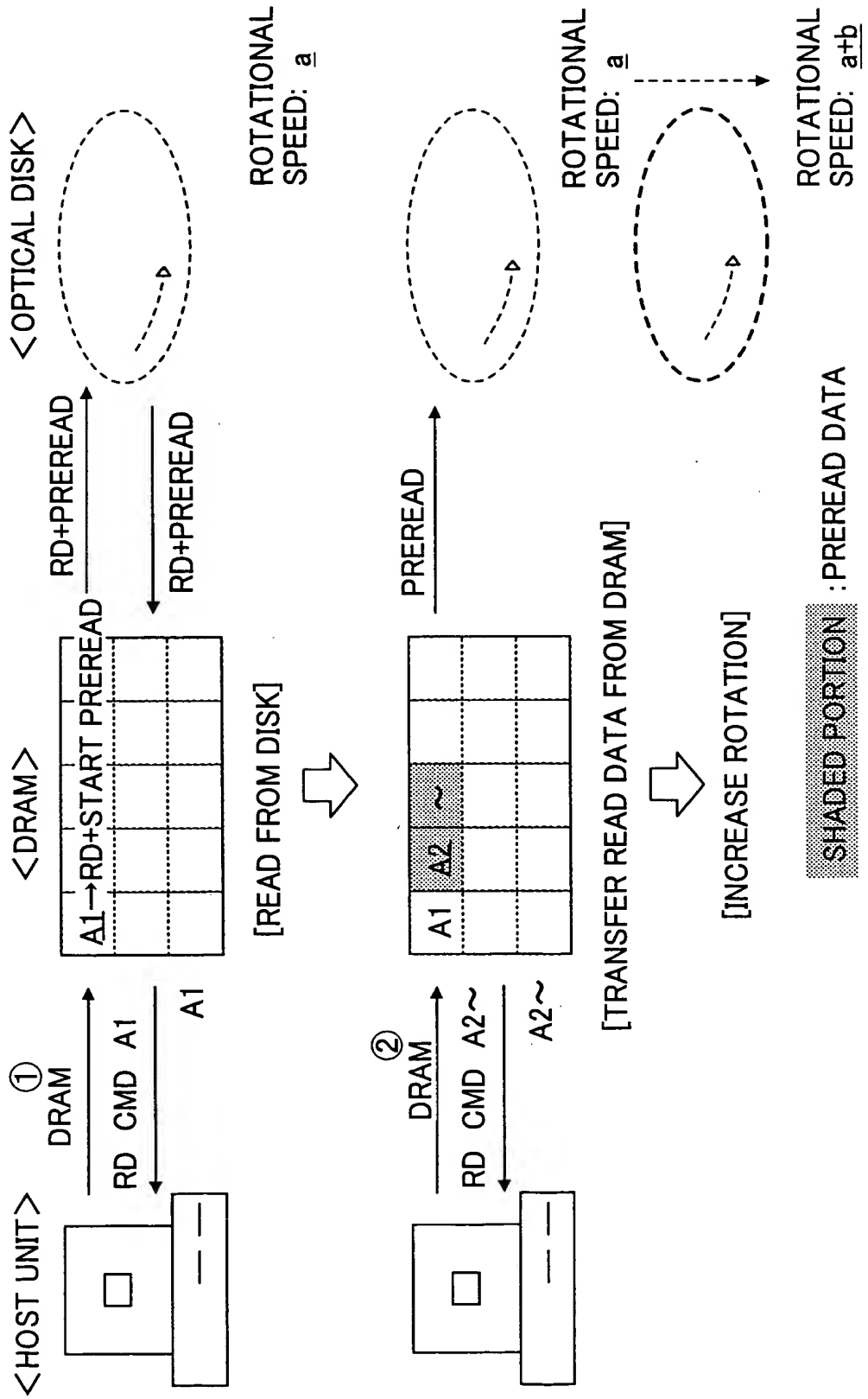


FIG.15

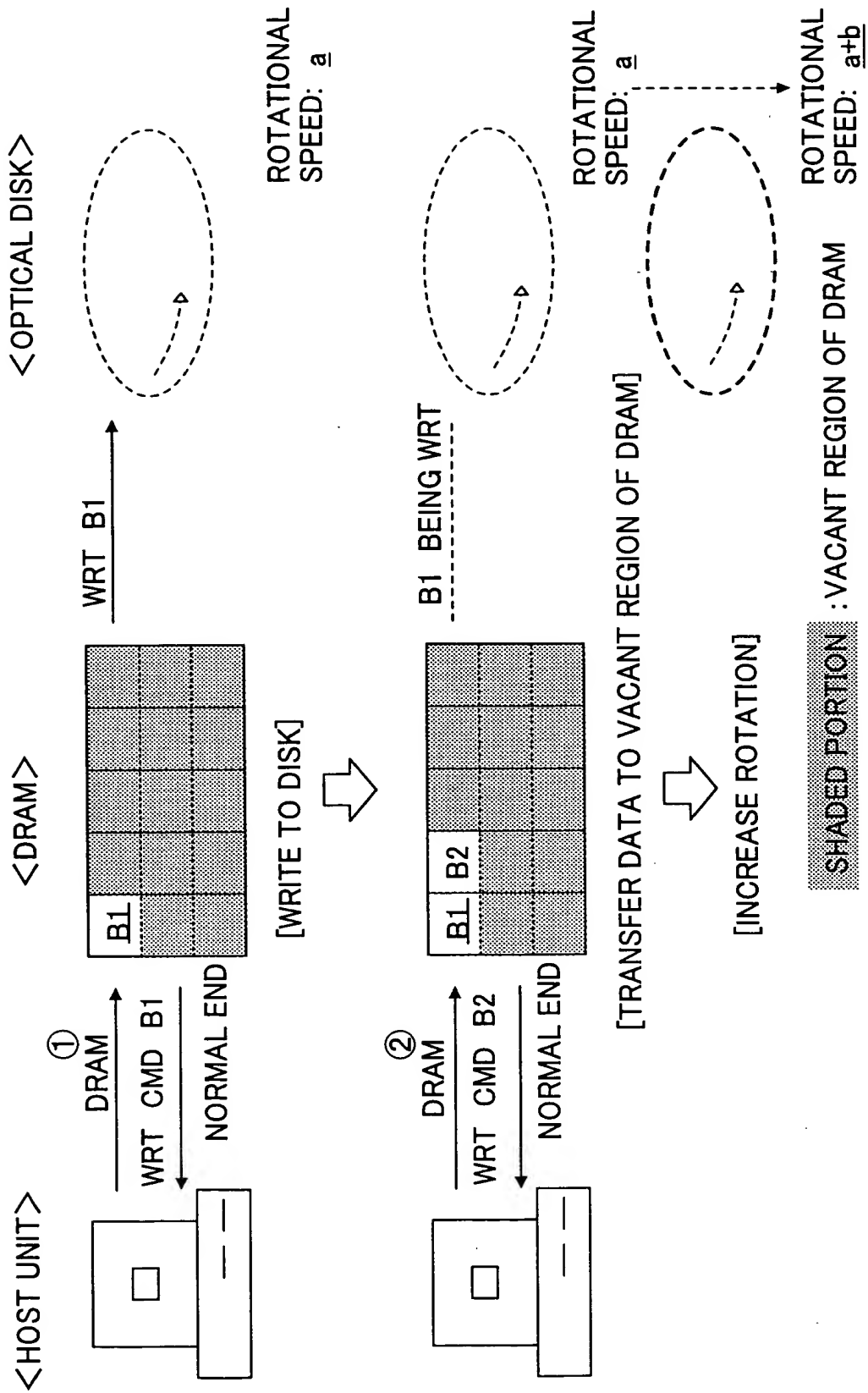


FIG.16

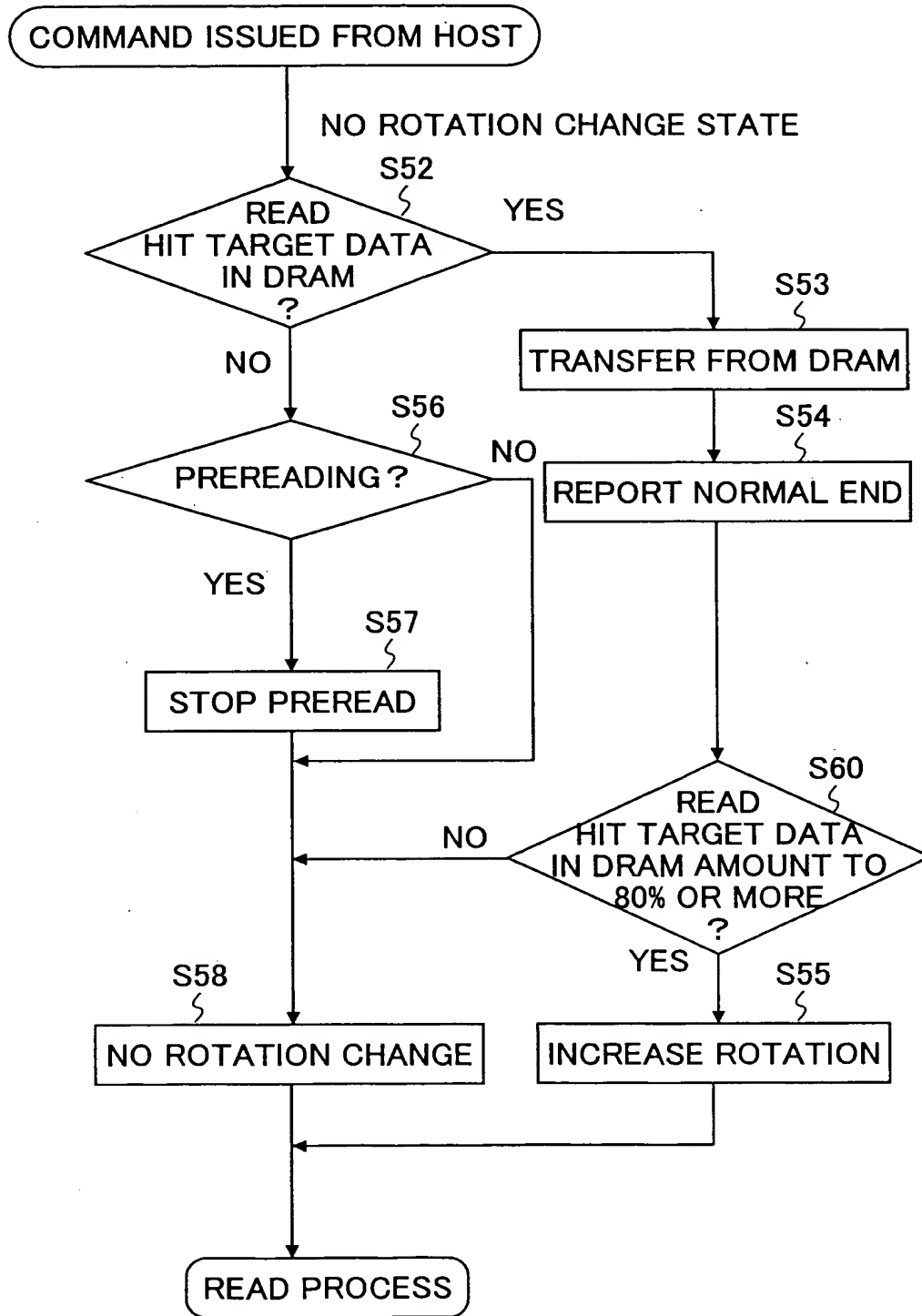


FIG.17

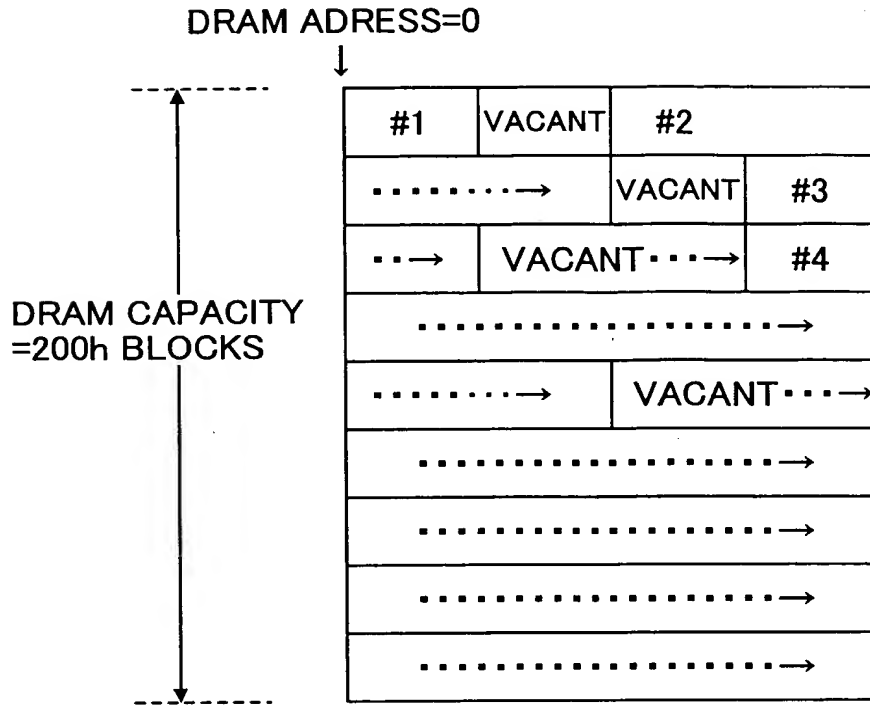


FIG.18

#	FIRST LBA	BCNO.	ADR OF FIRST LBA
1	1000	10	0
2	1020	40	4000
3	1070	20	E000
4	10B0	70	16000
.
n

(UNIT: Hex)

FIG.19

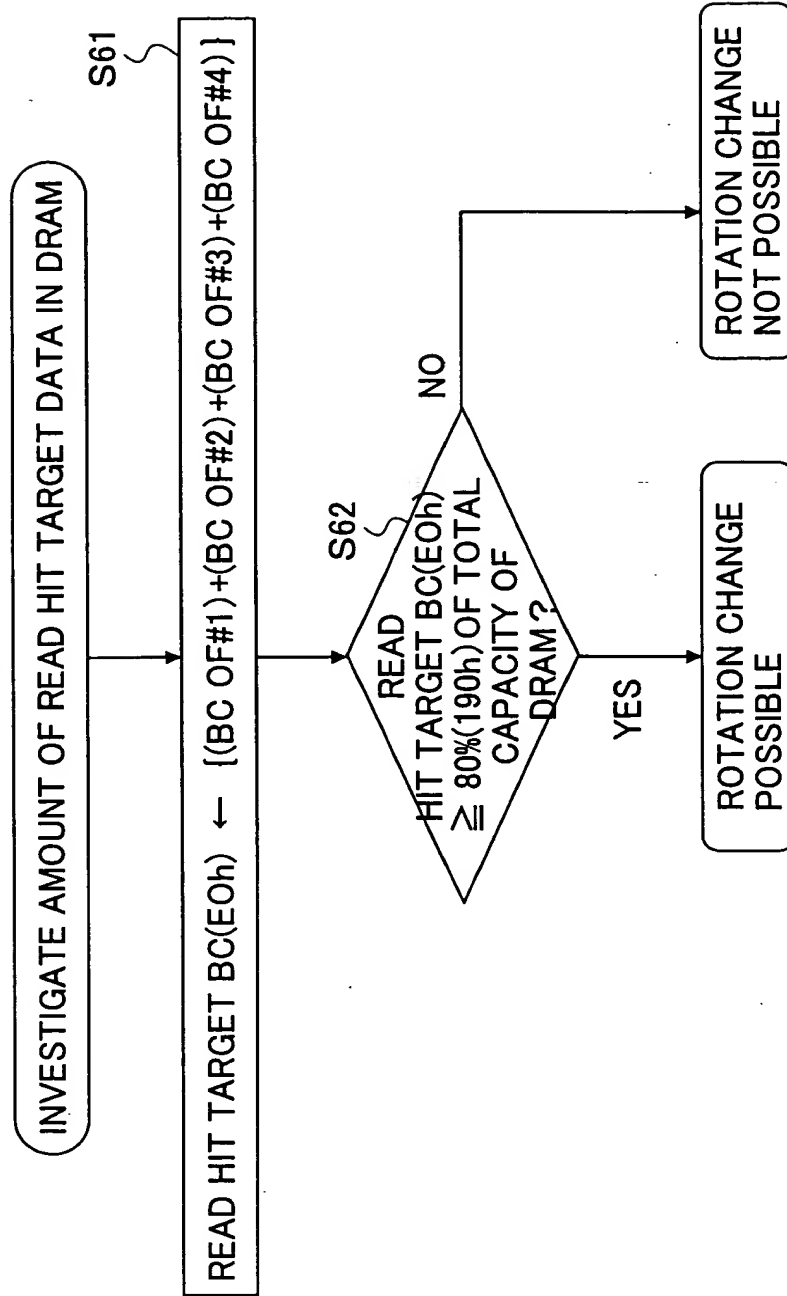


Diagram illustrating a data read operation from an optical disk to a host unit.

Host Unit: A box labeled "HOST UNIT" with a "RD CMD" (Read Command) signal sent to the disk.

Optical Disk: A box labeled "OPTICAL DISK" with a "RD+PREREAD" signal sent to the host unit. The disk's data is organized into a grid of columns (C1, C3, C5, C7, C9, C11, C13, C15) and rows (PREREAD, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15). The disk's rotational speed is indicated as "ROTATIONAL SPEED: a" and "ROTATIONAL SPEED: a+b".

Data Flow: The disk's data is read into a buffer (DRAM) and then sent to the host unit. The host unit's data is shown as a sequence of hexadecimal values: 1100h, 1180h, 1200h, 1280h, 1300h, 1380h, 1400h, 1480h. The host unit's data is also shown as a sequence of hexadecimal values: 113Fh, 11BFh, 123Fh, 12BFh, 133Fh, 13BFh, 143Fh, 14BFh.

FIG.21

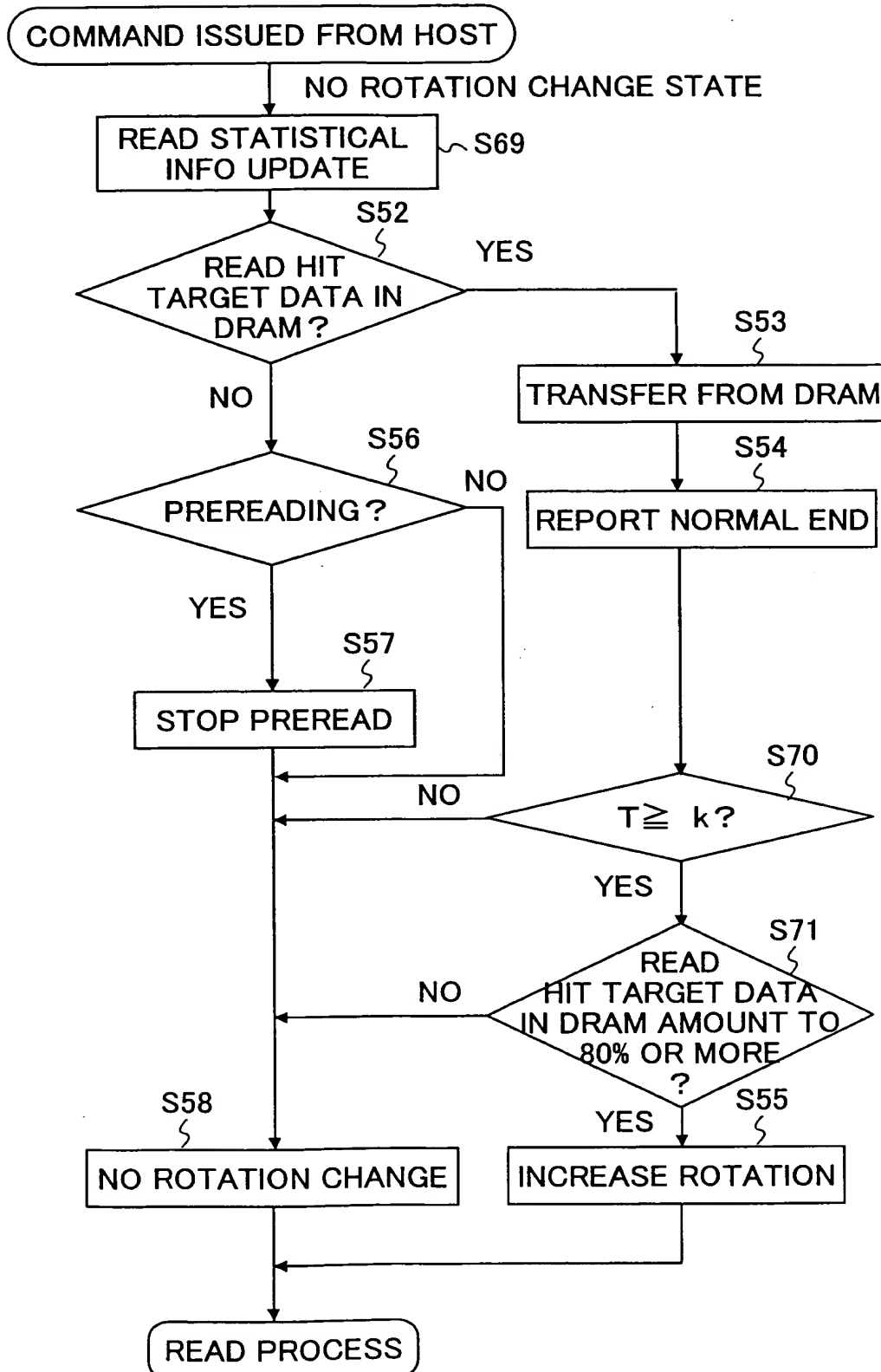


FIG.22

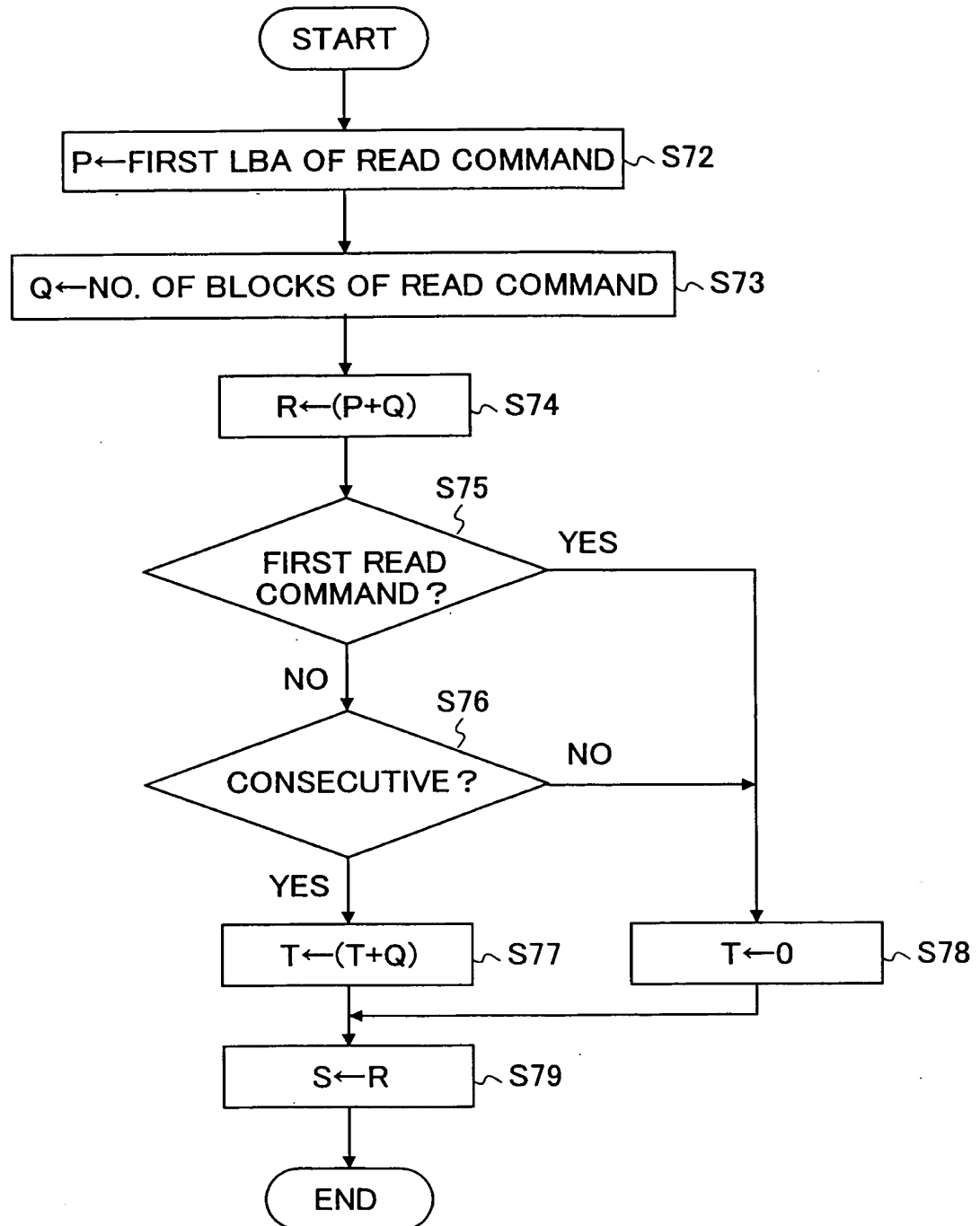


FIG.23

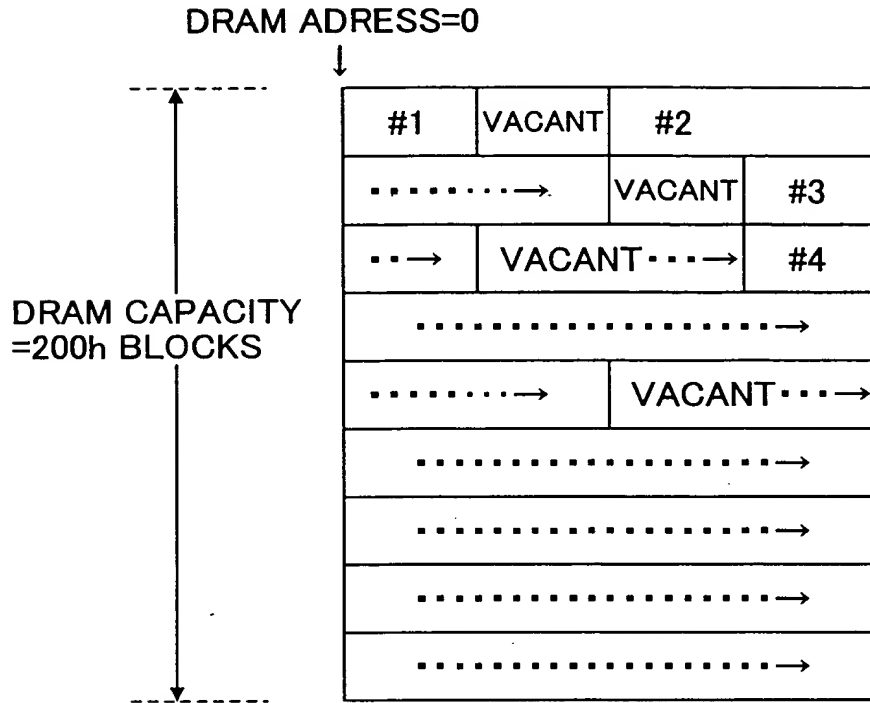


FIG.24

#	FIRST LBA	BCNO.	ADR OF FIRST LBA
1	1000	10	0
2	1020	40	4000
3	1070	20	E000
4	10B0	70	16000
.
n

(UNIT:Hex)

INVESTIGATE AMOUNT OF SEQUENTIAL READ HIT TARGET DATA IN DRAM

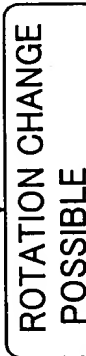


FIG.26

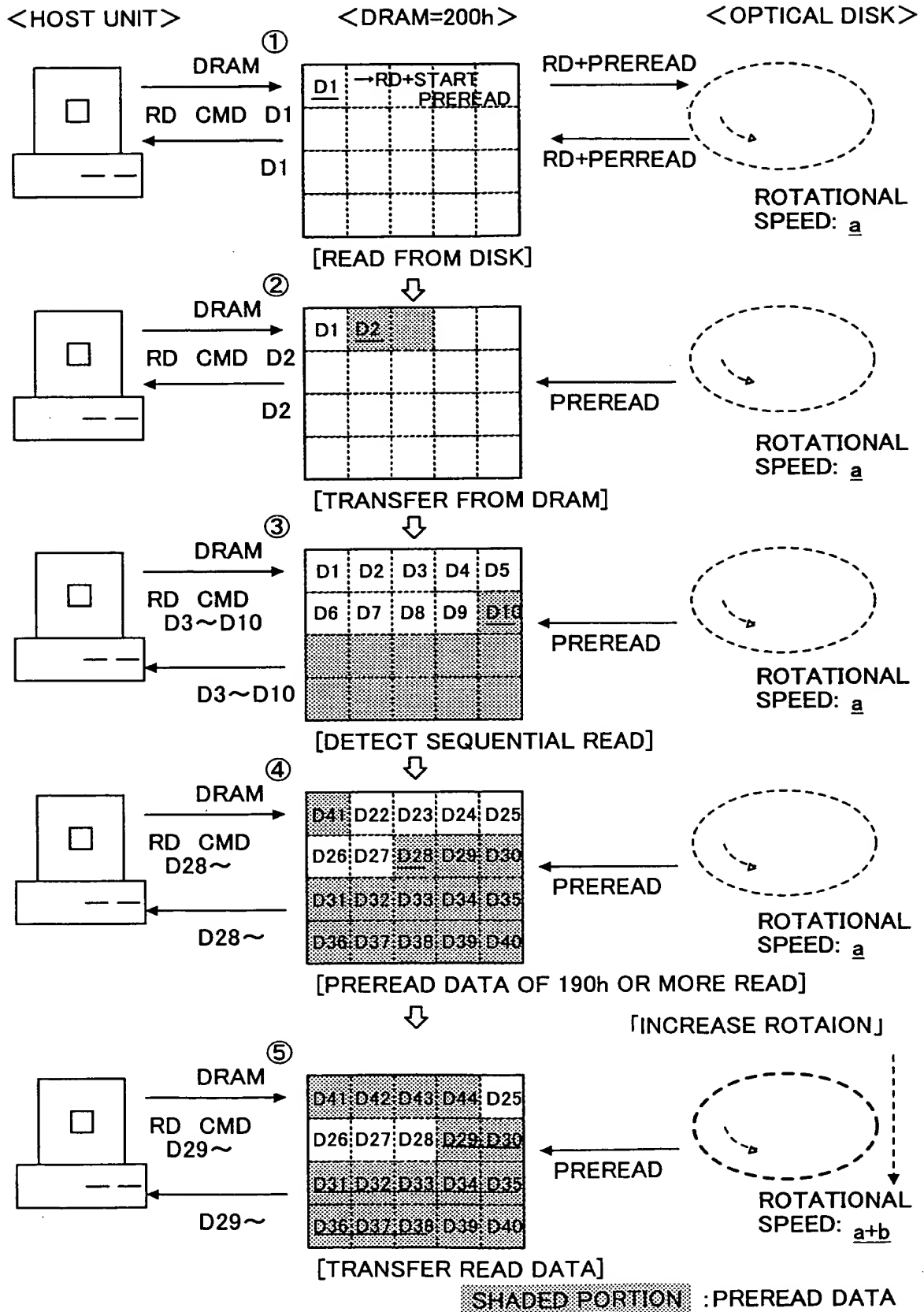


FIG.27

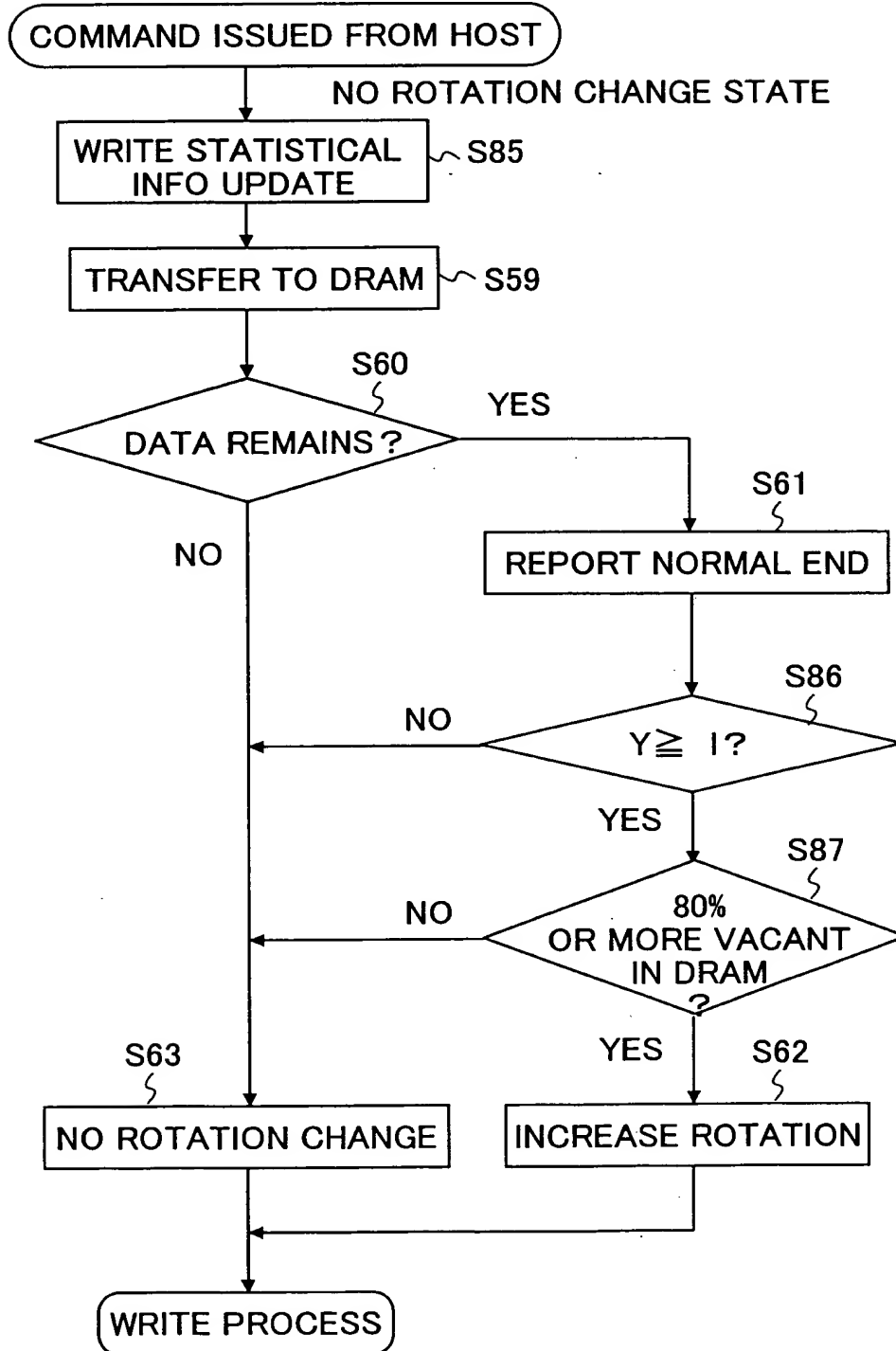


FIG. 27

FIG.28

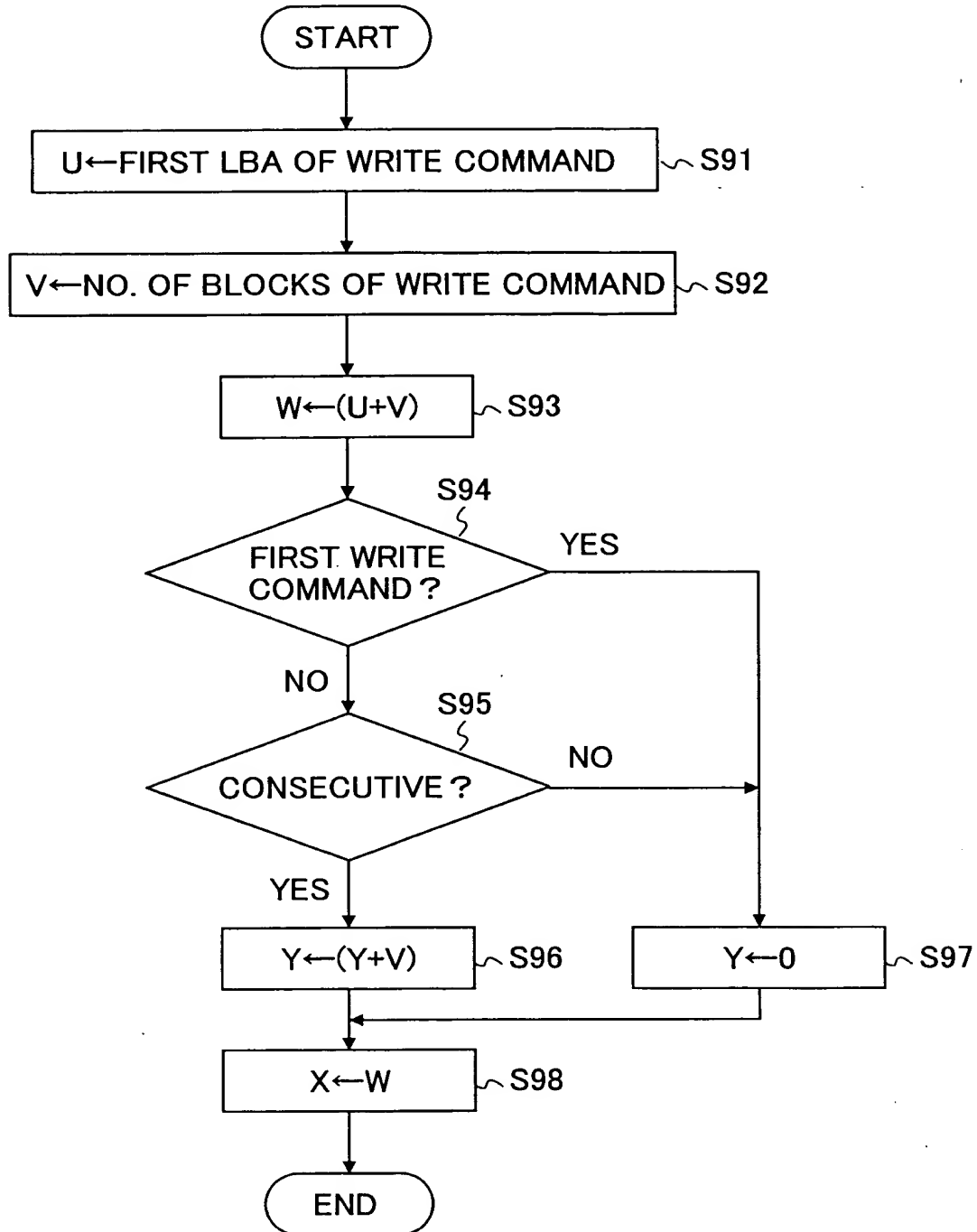


FIG.29

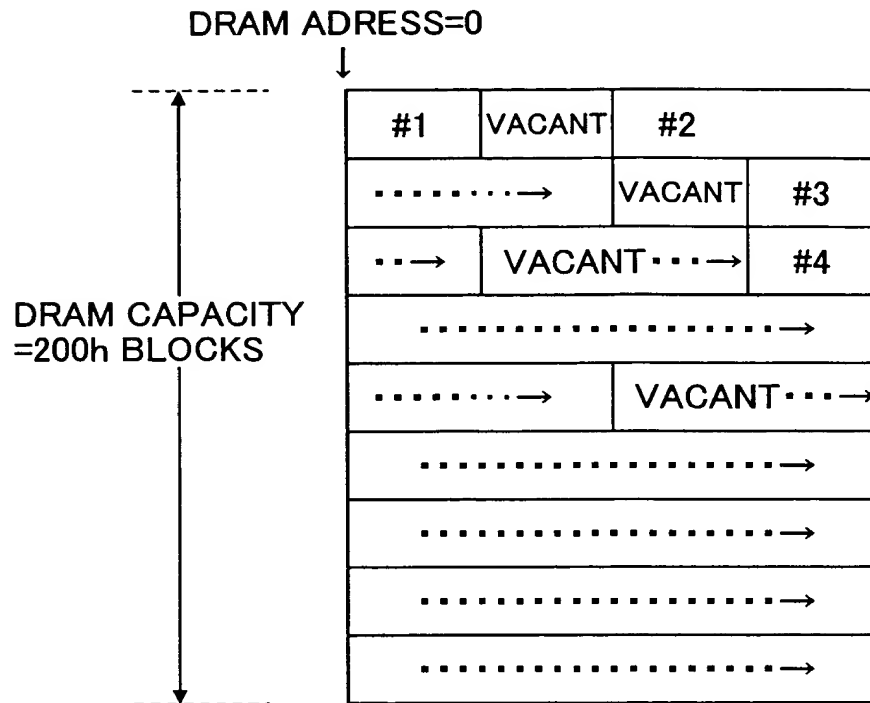


FIG.30

#	FIRST LBA	BCNO.	ADR OF FIRST LBA
1	1000	10	0
2	1020	40	4000
3	1070	20	E000
4	10B0	70	16000
.
n

(UNIT:Hex)

FIG.31

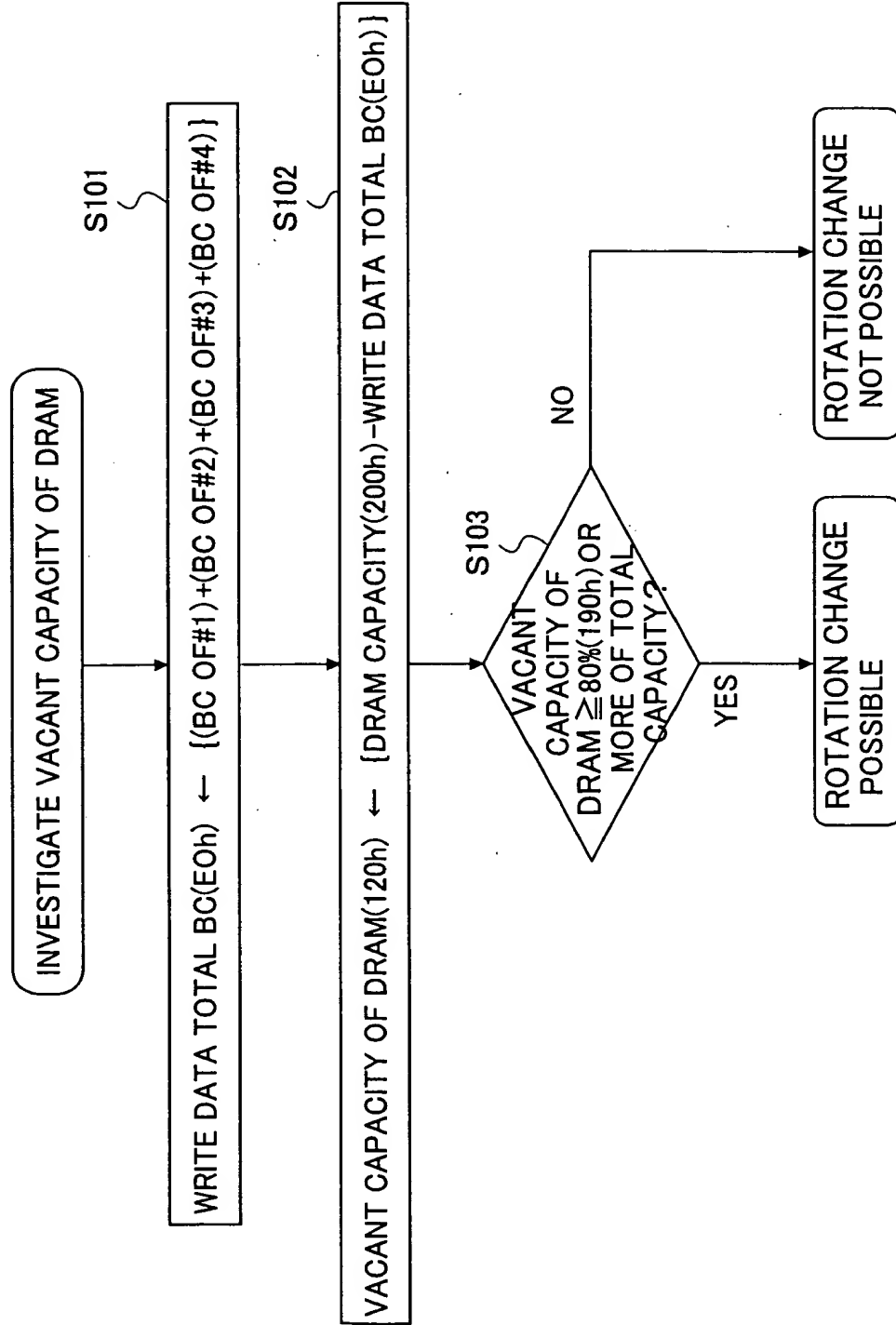


FIG.32

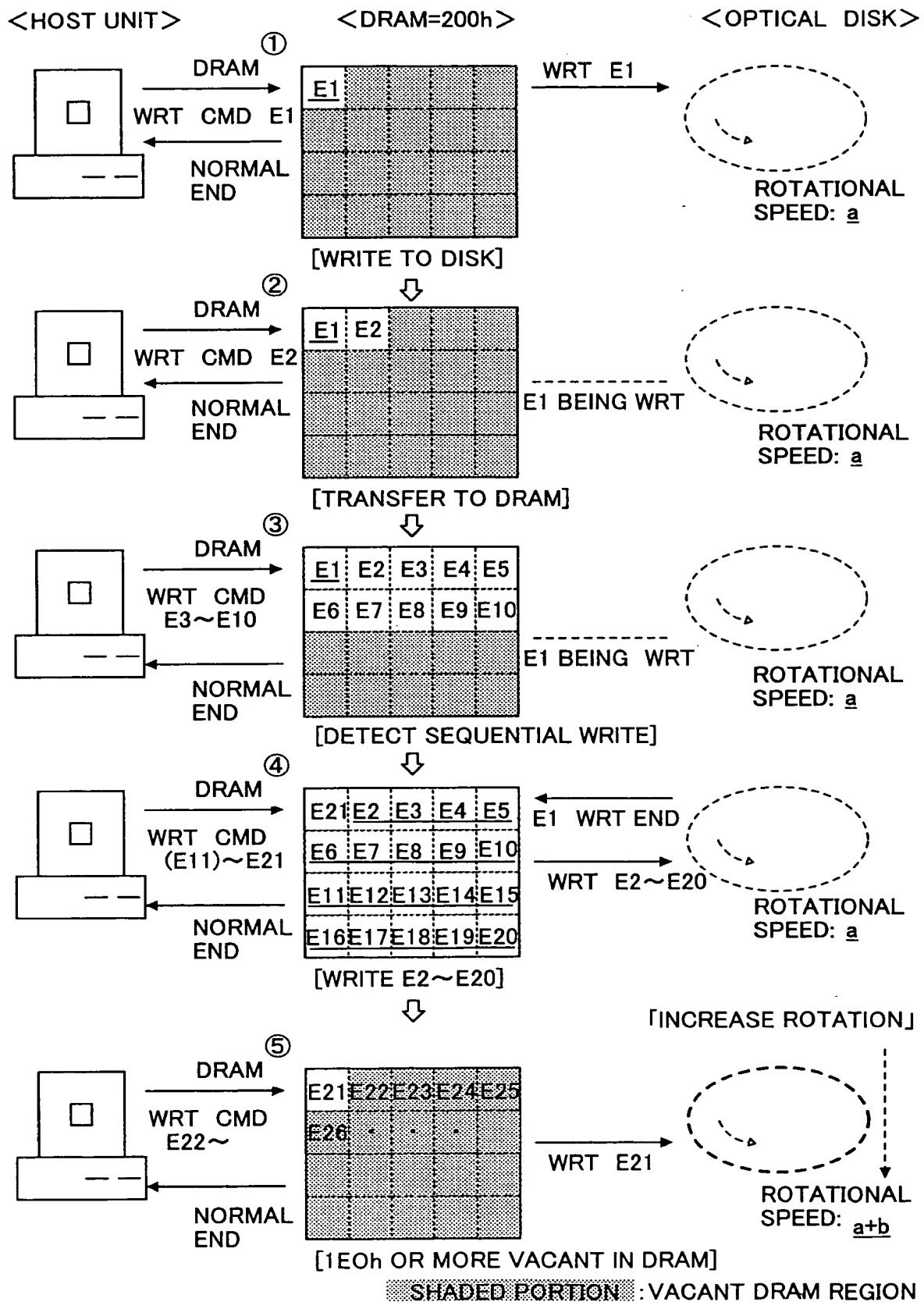


FIG.33

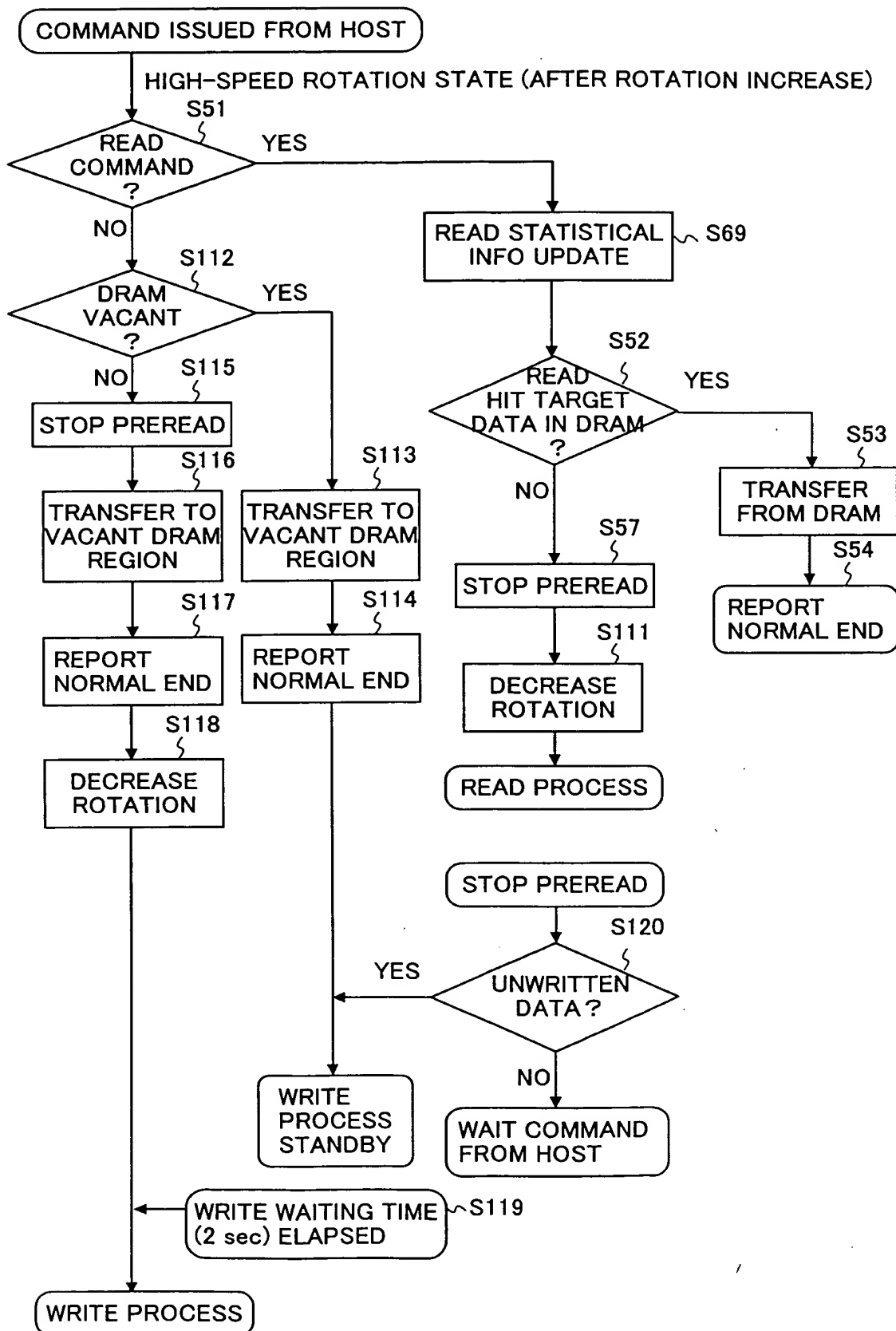


FIG.34

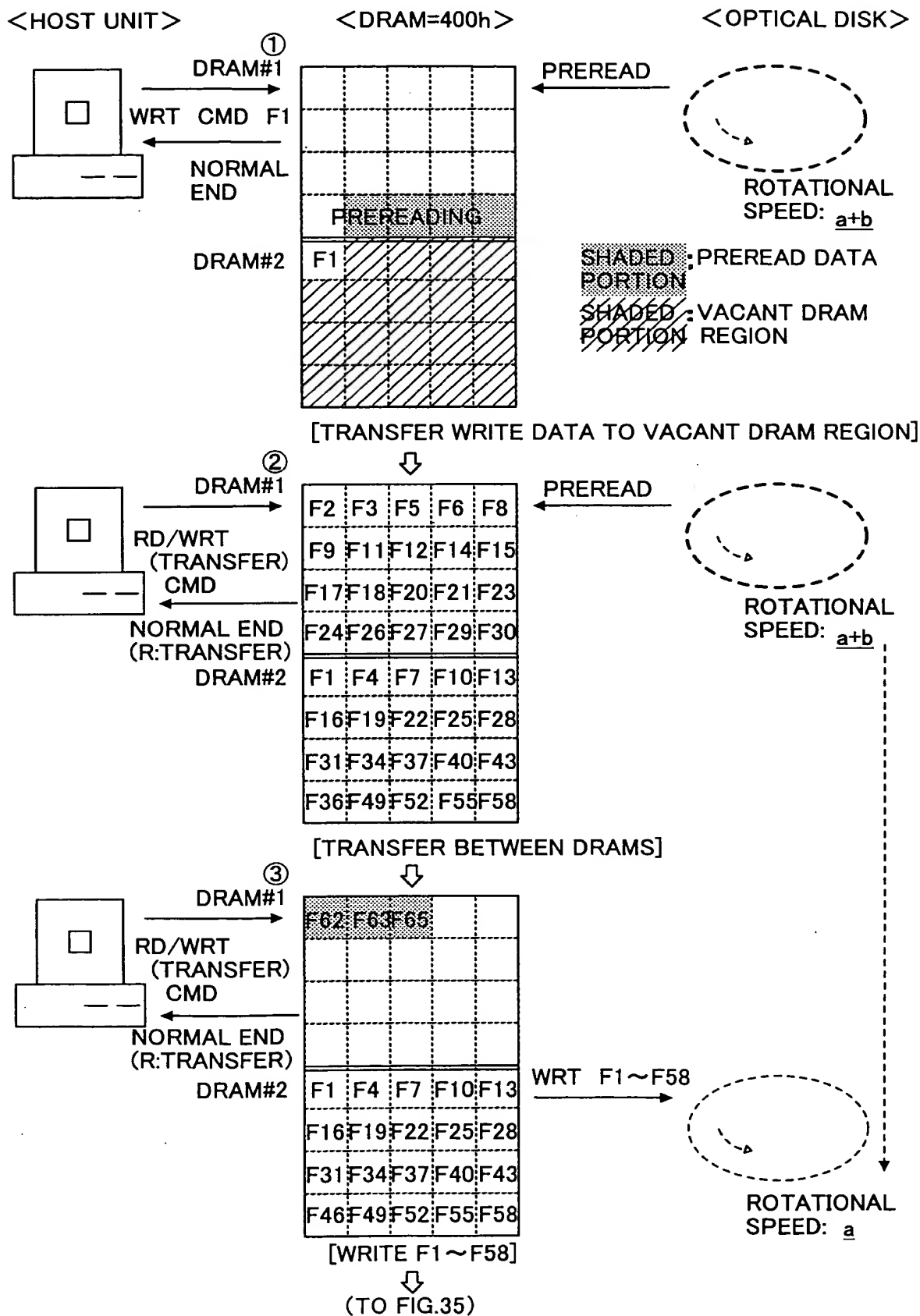


FIG.35

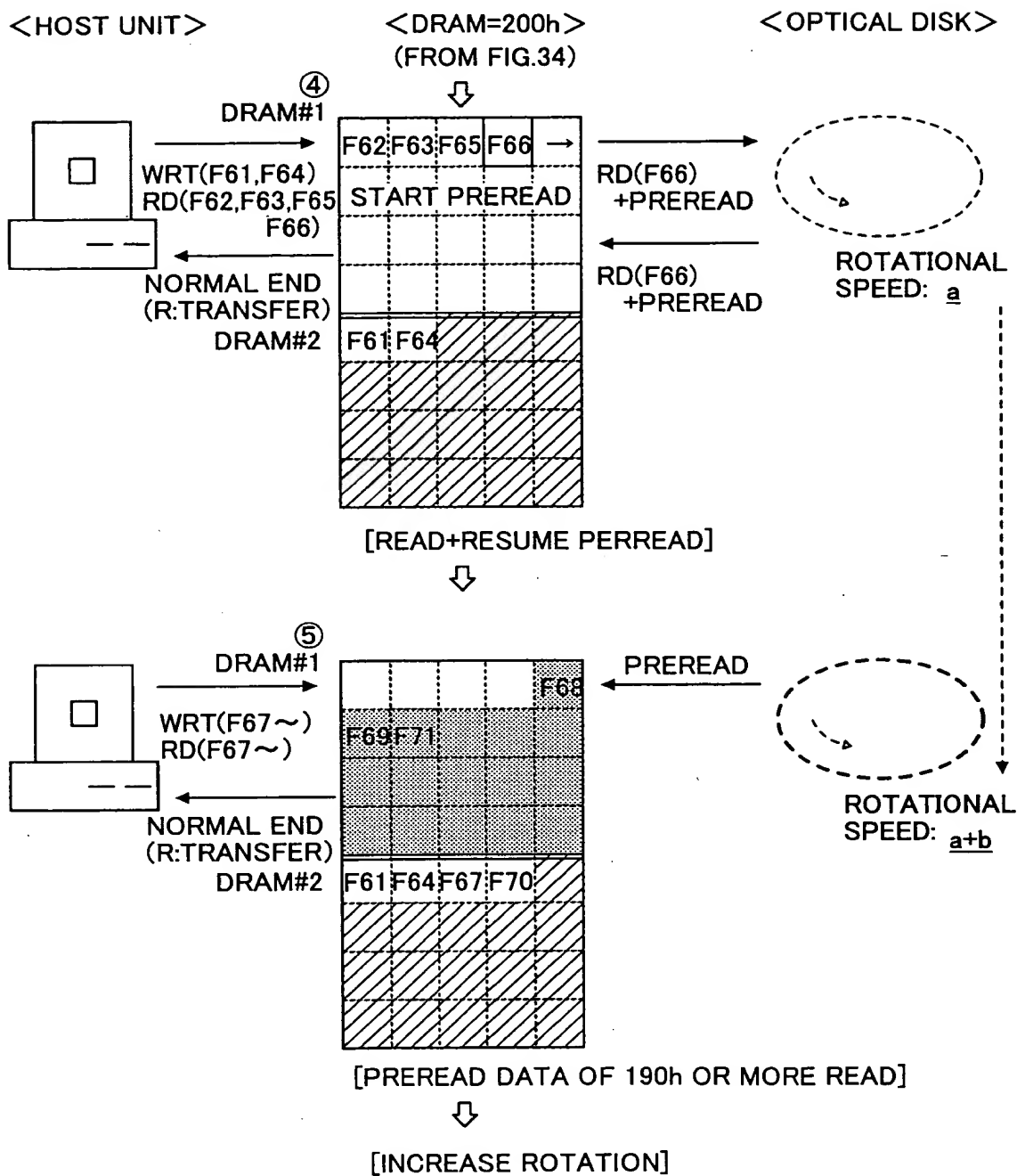


FIG.36

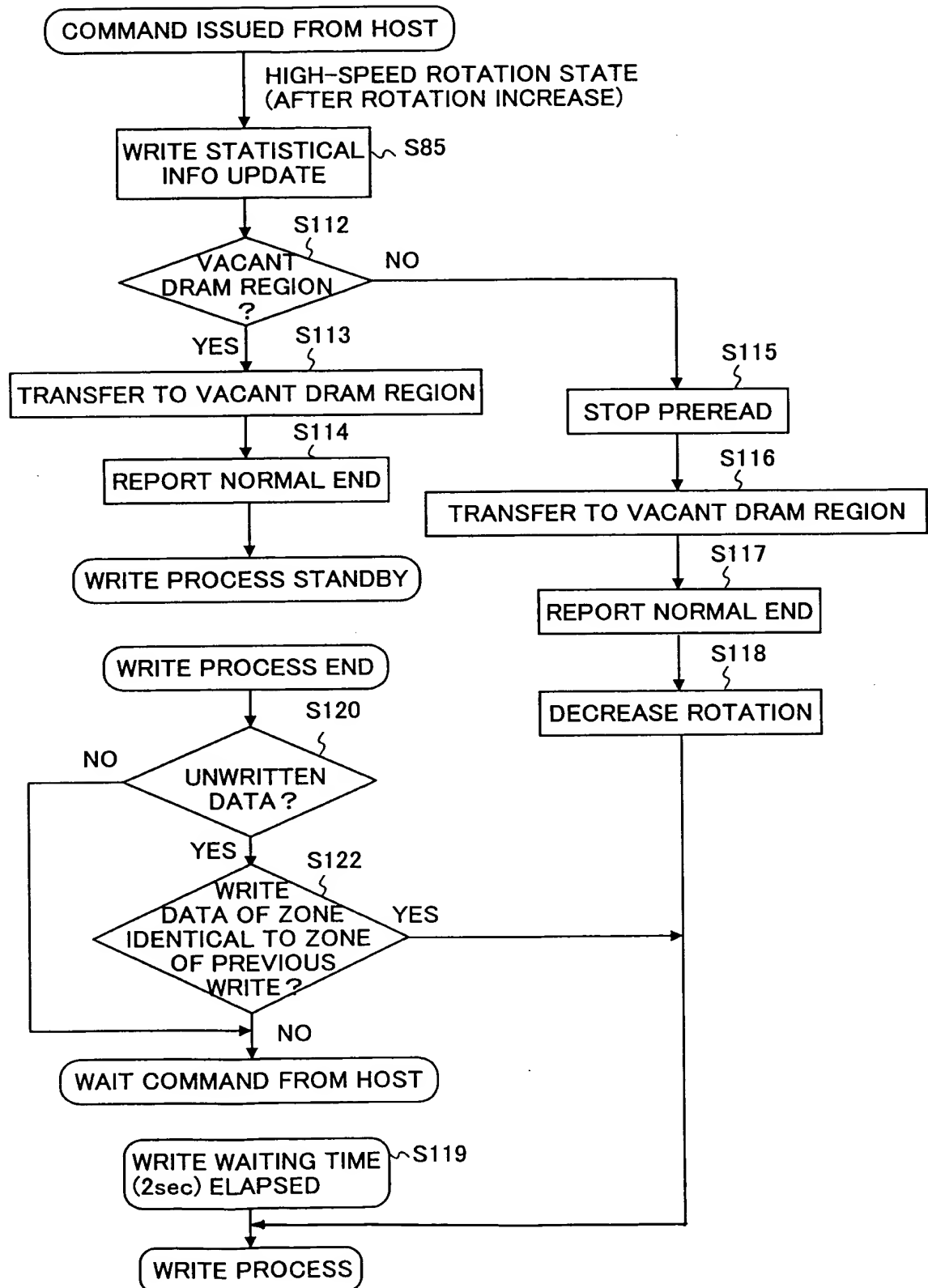


FIG.37

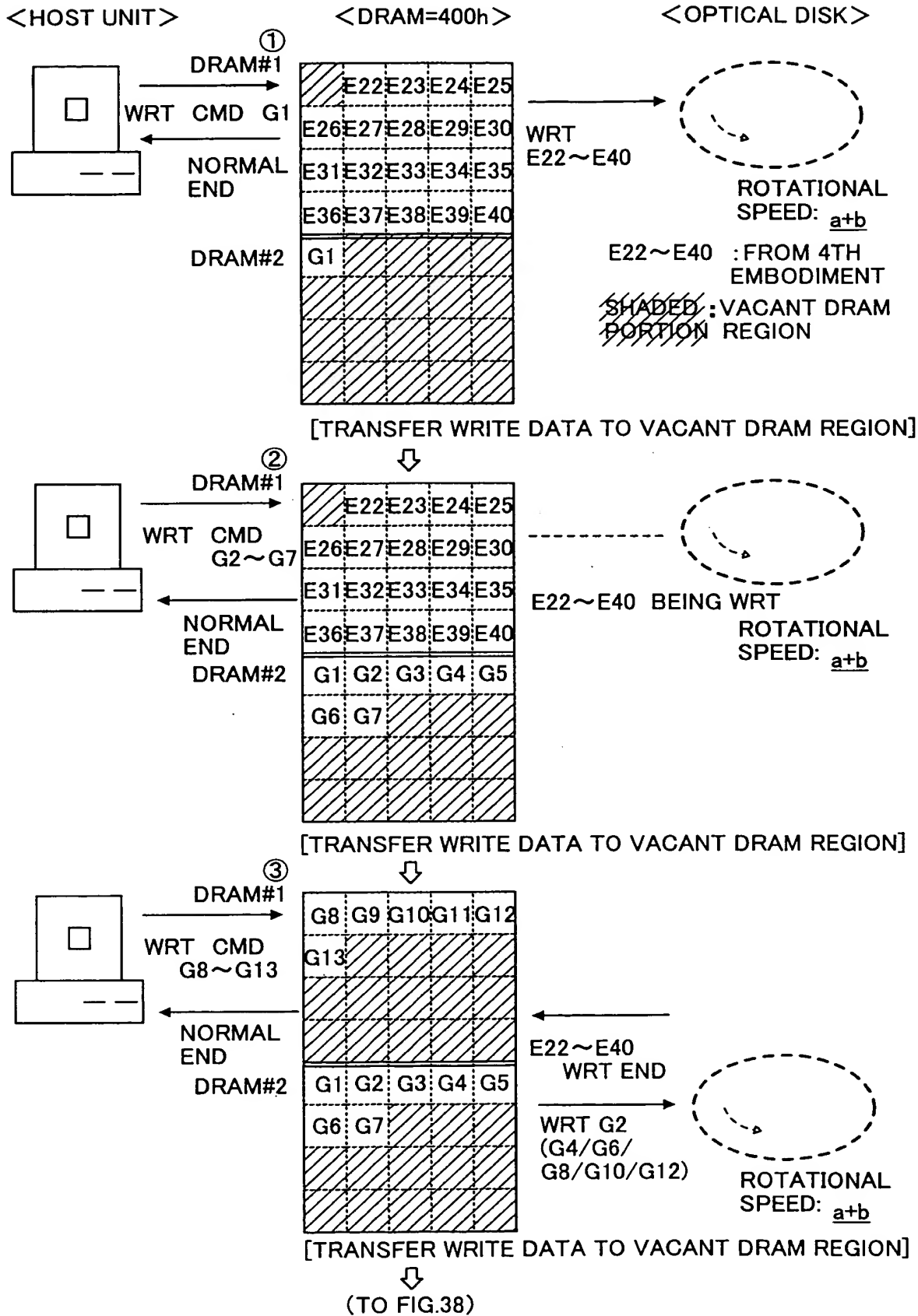


FIG.38

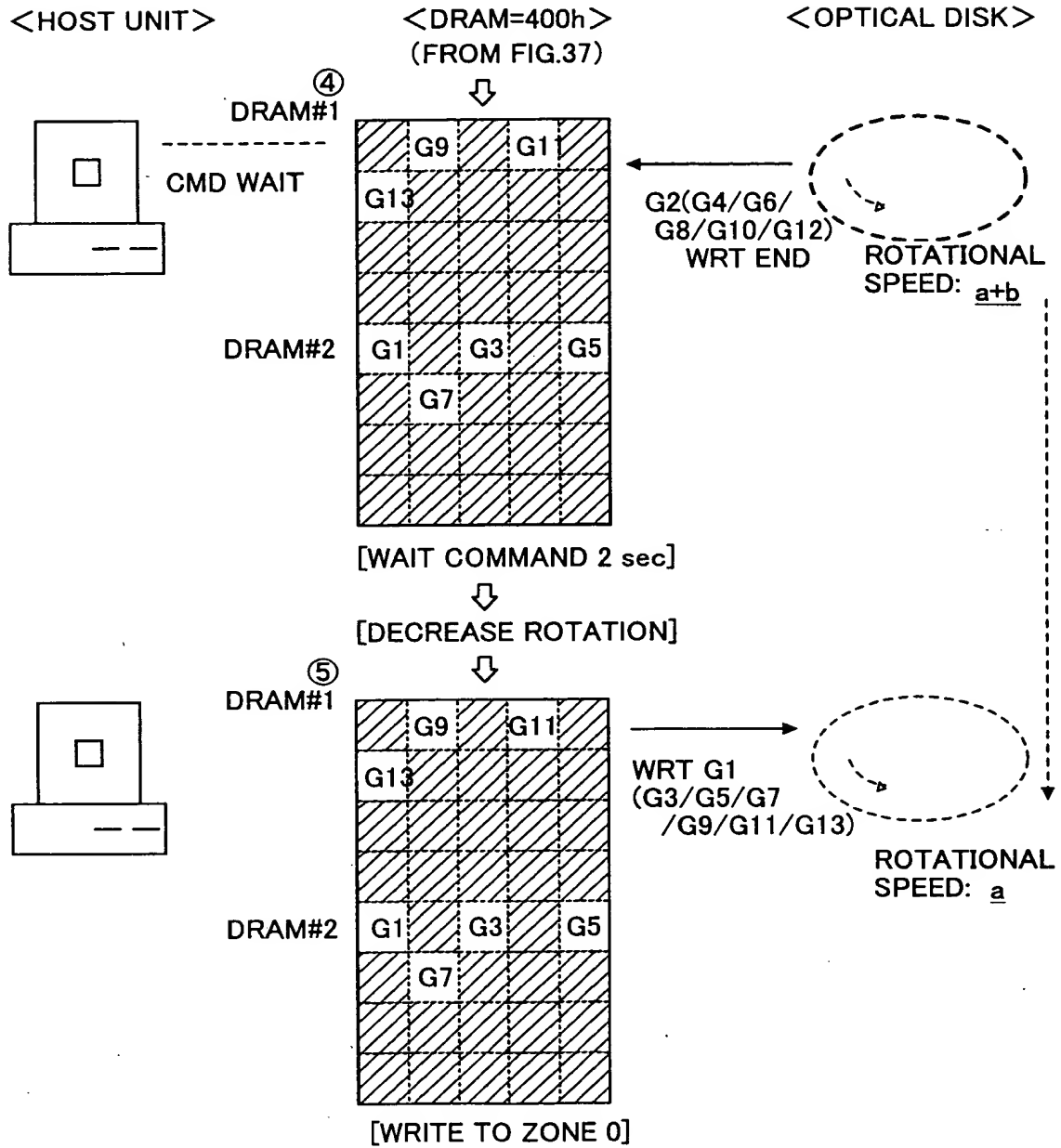


FIG.39

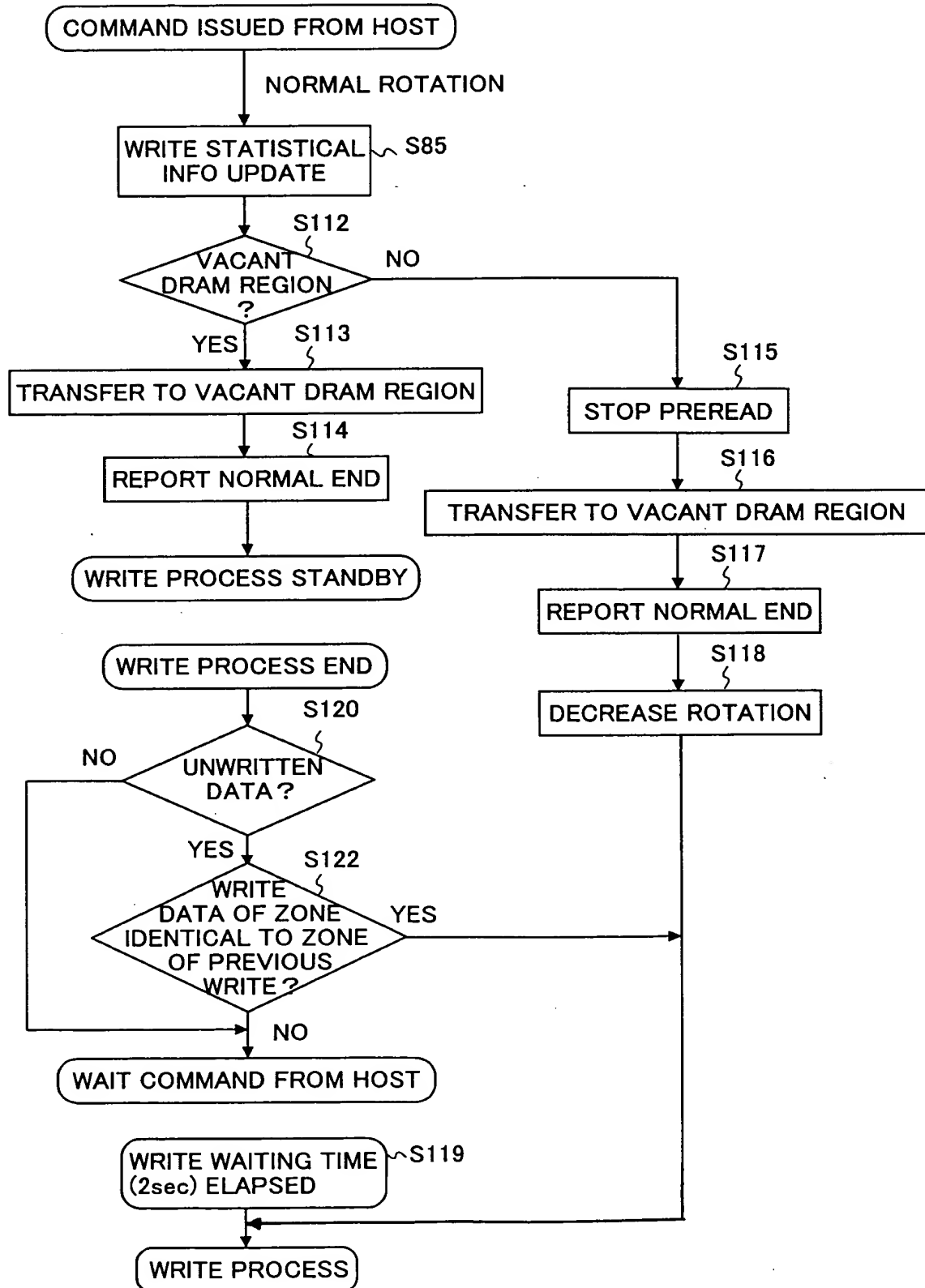


FIG.40

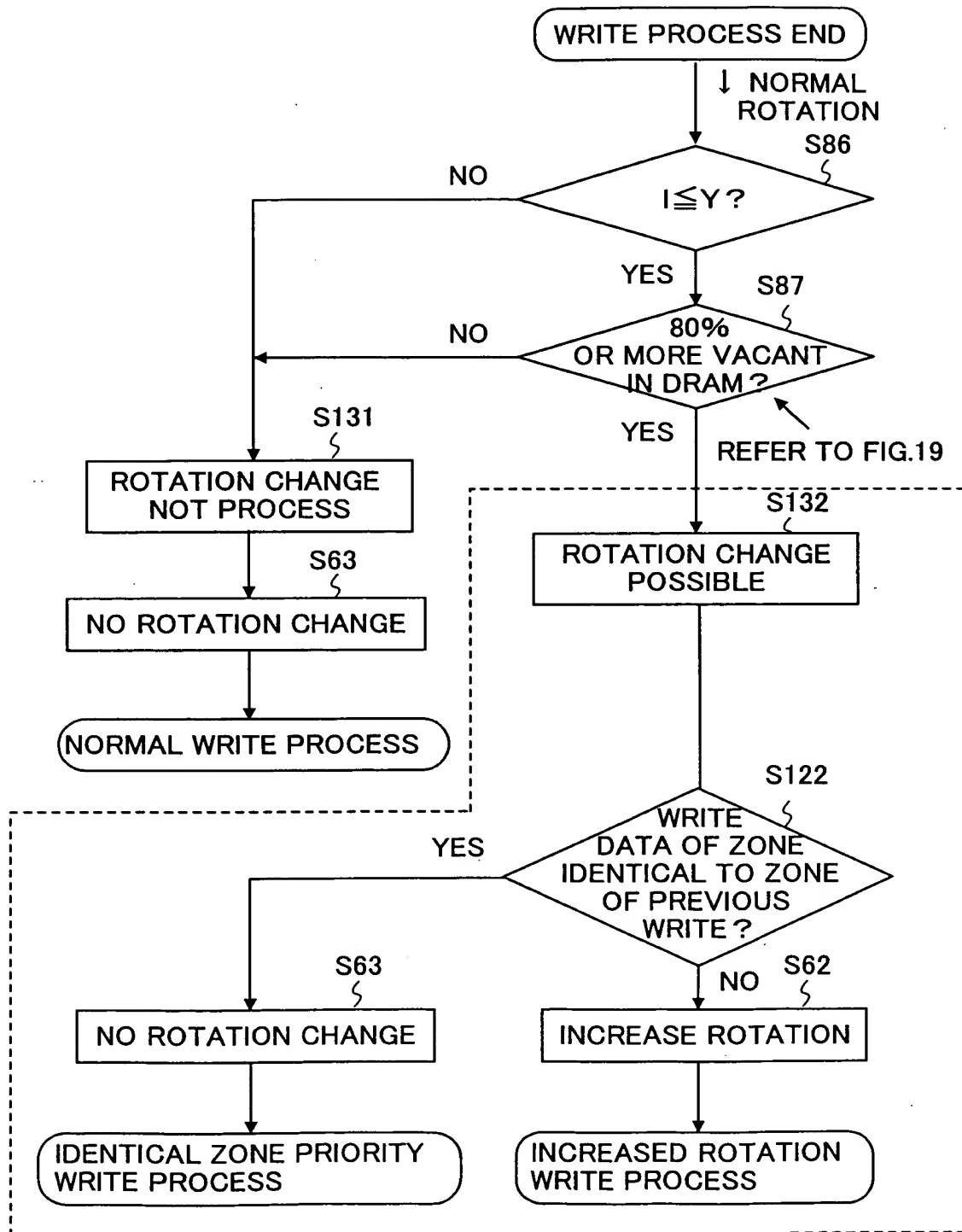


FIG.41

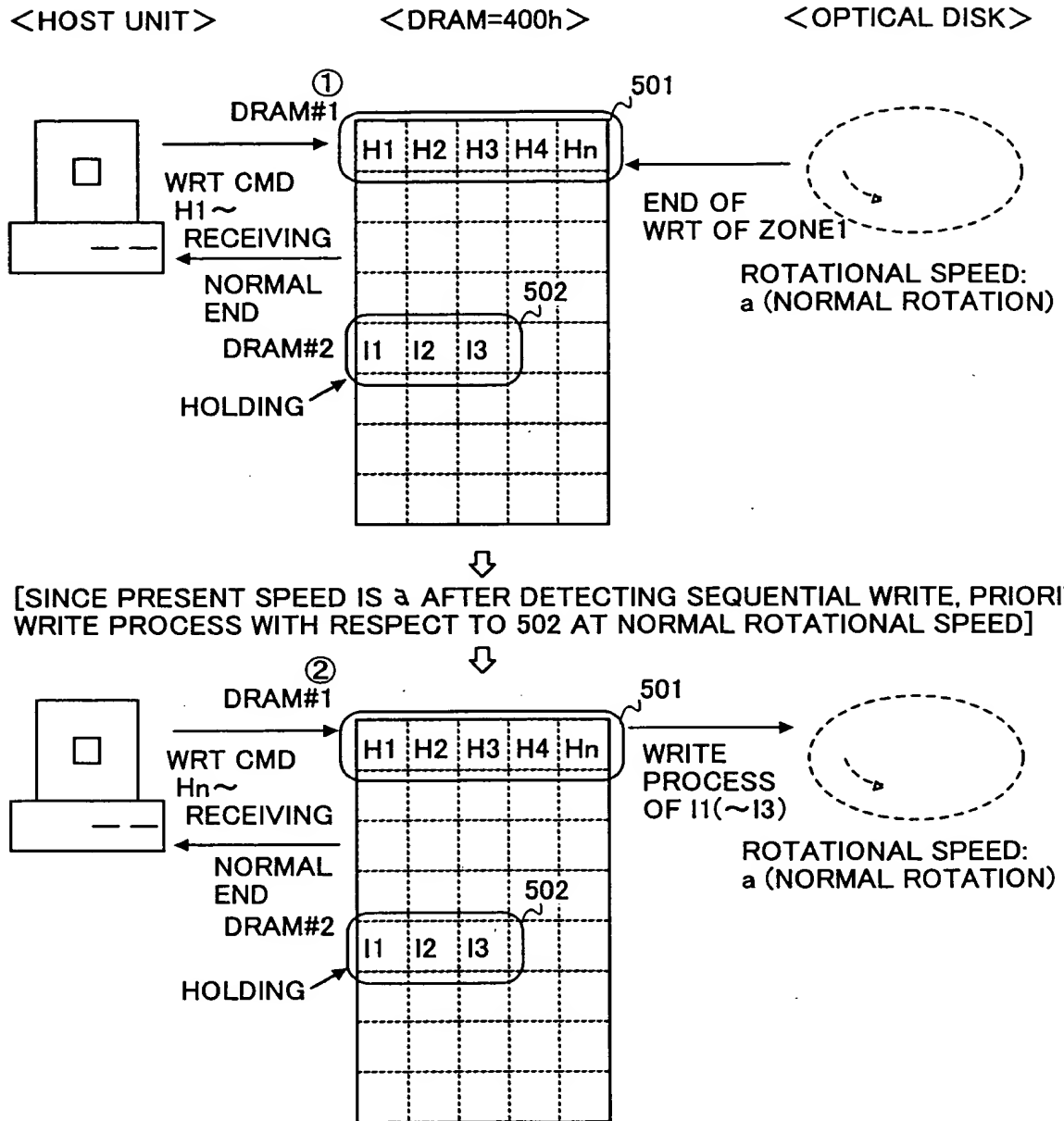


FIG.42

